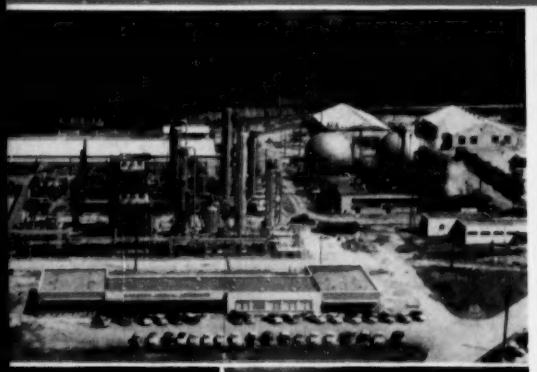
Chemical Week

January 22, 1955 Price 35 cents



New industrial look in Mississippi: manufacturing, paced by chemicals, upstages King Cotton . p. 18

Controlled cooling could unfetter long-known but little-used nitric pulping process . . . . . p. 34

Herron and Vagtborg: They argue fairness of institute vs private labs competition . . . . . p. 49

Penny saved is worth several earned; that's behind how-to-buy training plan . . . . . p. 62

Half-billion barrels of residual oil intrigue makers of special additives . . . . . p. 82

A McGRAW-HILL PUB

E P POWER G
UNIVERSITY MICROFILMS IN
313 N 1ST ST
ANN ARBOR MICH

**Use your present equipment . . .
open or closed kettles . . . and produce
at competitive prices a superior wall paint with . . .**

Now you can add a high quality, odorless flat wall paint to your line without buying special processing equipment. You build your own vehicle *right from the resin* at substantial savings over a purchased vehicle. You can offer your customers a many-ways-better paint at competitive prices.

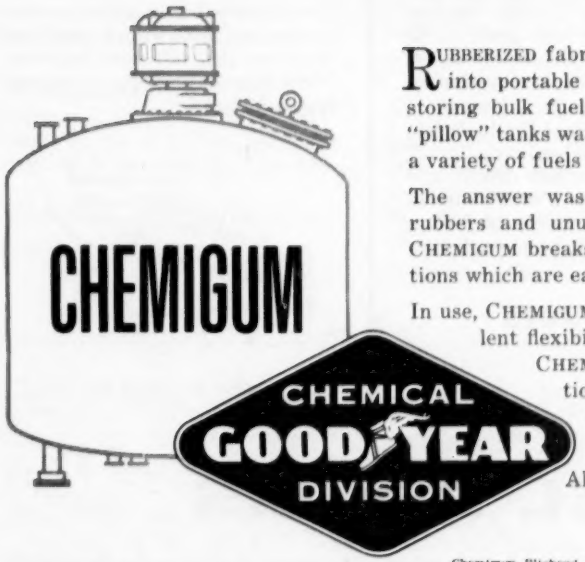
- ***Excellent Adhesion***
- ***Good Leveling Qualities***
- ***Uniform One-Coat Coverage***
- ***Unlimited Range of Colors***
- ***Good Holdout***
- ***Superior Washability***

Write for the technical bulletin on odorless wall paint today and be the first in your area to take advantage of this new Shell Chemical development.

SHELL CHEMICAL CORPORATION
CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE
380 Madison Avenue New York 17, New York

Atlanta · Boston · Chicago · Cleveland · Detroit · Houston · Los Angeles · Newark · New York · San Francisco · St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited · Montreal · Toronto · Vancouver

Now—roll-away service stations



RUBBERIZED fabric tanks that hold up to 10,000 gallons, yet roll into portable packages when empty, are the latest means of storing bulk fuels in the field. Twin problem in building these "pillow" tanks was finding a workable rubber that could withstand a variety of fuels and field conditions.

The answer was CHEMIGUM—easiest-processing of the nitrile rubbers and unusually resistant to oils, greases and solvents. CHEMIGUM breaks down on the mill rapidly to give uniform solutions which are easily applied to the Nylon fabric.

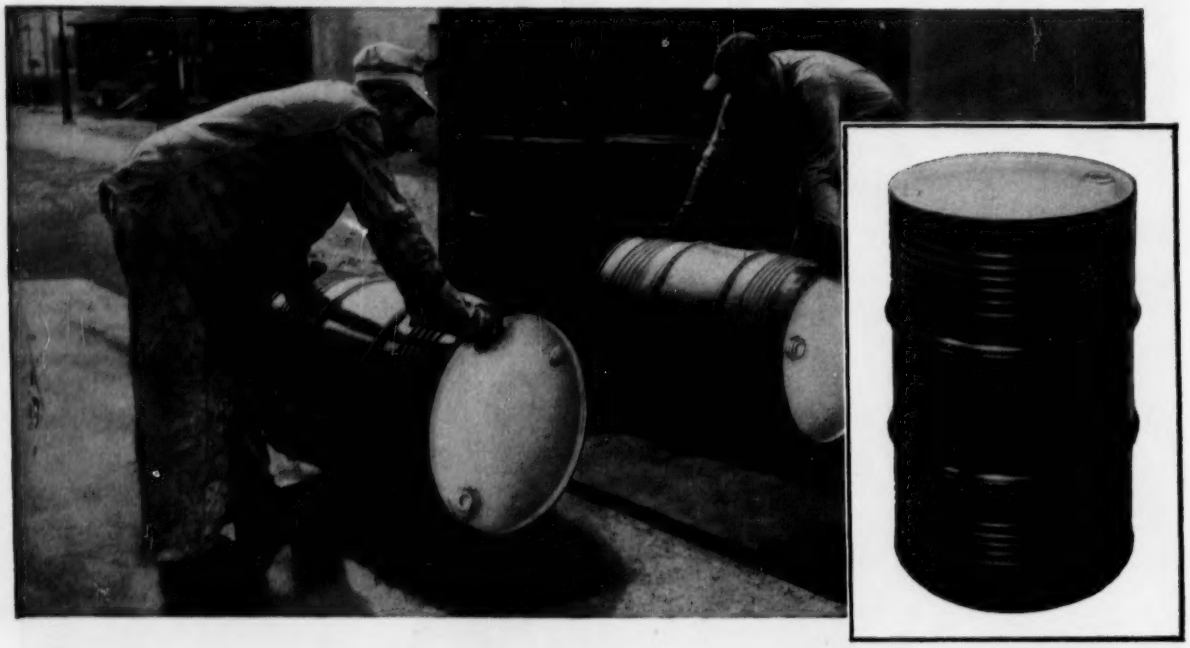
In use, CHEMIGUM imparts high resistance to all fuels, plus excellent flexibility and low porosity in any weather. What can CHEMIGUM—calendered, molded, extruded or in solution—do for your product? Full technical help and samples are yours by writing:

Goodyear, Chemical Division, Dept. A-9417-A, Akron 16, Ohio

Chemigum, Pliobond, Pliolite, Plio-Tuf, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

The Finest Chemicals for Industry — CHEMIGUM · PLIOBOND · PLIOLITE · PLIO-TUF · PLIOVIC · WING-CHEMICALS

Want to carry quality control right into your customer's shop?



You can . . . with USS STEEL DRUMS

THERE'S no need to stop quality control when products leave your plant. With USS scale-free, rust-inhibited Drums you can carry it *all the way* . . . when your customer is ready to use your products, they will be as clean and uncontaminated from scale, dirt, grease and rust as when they were packaged.

Whether your products are to be shipped long distances, stored for a long time, or both, their quality is well guarded in safe, sturdy USS Steel Drums. They're safe because a tight rust-resisting coating is applied over a surface that's been completely cleaned. They're sturdy because they're made of high-grade USS Steel. USS Steel Drums are better for you . . . better for your customers.

• United States Steel Products fabricates stainless, galvanized, tinned, painted and decorated drums and pails. Furnished in a wide range of capacities with a variety of fittings and openings to fit your particular requirements.

UNITED STATES STEEL PRODUCTS
DIVISION
UNITED STATES STEEL CORPORATION
DEPT. 315, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
Los Angeles and Alameda, Calif. • Port Arthur, Texas • Chicago, Ill.
New Orleans, La. • Sharon, Pa.

Write for free brochure

For additional information on this quality steel drum write to us at New York for this full-color brochure, "USS Drums—100% Scale-free and Rust-inhibited."

"It's Better to Ship in Steel"

USS STEEL DRUMS

UNITED STATES STEEL

Chemical Week

Volume 76 | January 22, 1955 | Number 4

PUBLISHER.....Wallace F. Traendly
EDITORIAL DIRECTOR.....Sidney D. Kirkpatrick
EDITOR.....W. Alec Jordan
MANAGING EDITOR.....Howard C. E. Johnson

Features Editor: Donald P. Burke

DEPARTMENT EDITORS
Business & Industry: Jane H. Cutaia
Distribution: Raymond H. Layer
Markets: Anthony J. Piombino
Production: D. P. Burke
Research: Ralph R. Schulz
Specialties: J. R. Warren

Special Projects: Homer Starr

Illustration, Format: Donald R. Thayer

Copy: William Mullinack

ASSISTANT EDITORS
Business & Industry: Vincent L. Marsilia
Distribution: John M. Winton
Markets: Richard Ringheim
Production: Kenneth Wilsey, Michael L. Yaffee
Research: Joseph F. Kalina
Specialties: Robert C. Hosford

REGIONAL EDITORS
Midwest: Frank C. Byrnes, Chicago
Southwest: James A. Lee, Houston
West Coast: Elliot Schrier, San Francisco

EDITORIAL ASSISTANTS
Charles Joslin
Kay Sebiry

NATIONAL NEWS
Economics: Dexter M. Keezer, *Director;* Douglas Greenwald, Robert P. Ulin

Atlanta: William Kearns
Cleveland: Robert E. Cochran
Detroit: James C. Jones
Los Angeles: John Shinn
San Francisco: Margaret Ralston
Washington: George B. Bryant, Jr.

Correspondents in 73 principal cities

WORLD NEWS
John Wilhelm, *Editor*
Georgia Macris, *Associate Editor*
London: Edward W. S. Hull
Paris: John O. Coppock
Bonn: Gerald W. Schroder
São Paulo: Lionel Holmes
Mexico City: John H. Kearney
Tokyo: Dan Kurzman

Correspondents in 44 capitals and principal cities

ADVERTISING STAFF
Sales Director: B. E. Sawyer
Sales Manager: R. S. Muller
Business Manager: A. J. Mangold
Sales Promotion Mgr.: E. A. Atwood, Jr.
Market Service Mgr.: Adolph I. Losick
Sales Reps.: See Advertisers Index

Chemical Week (including Chemical Specialties and Chemical Industries) is published by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), founder. Publication Office: 1309 Noble St., Philadelphia 23, Pa.

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke Secretary; Paul Montgomery, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions to Chemical Week are solicited from management men in the chemical process industries. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 1309 Noble St., Philadelphia 23, Pa., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Single copies 35¢ except Annual Buyer's Guide issue, priced at $2.50. Subscription rates—United States and Possessions $5.00 a year; $8.00 for two years; $10.00 for three years. Canada $6.00 for a year; $10.00 for two years; $12.00 for three years. Other Western Hemisphere Countries $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $25.00 a year; $40.00 for two years; $50.00 for three years. Entered as second class matter December 20, 1951, at the Post Office at Philadelphia 23, Pa., under the act of March 3, 1879. Printed in U.S.A. Copyright 1955 by McGraw-Hill Publishing Co., Inc.—All rights reserved.

4 OPINION
Behind the news

9 NEWSLETTER

13 BUSINESS & INDUSTRY
Cutbacks here, increases there; that's Eisenhower's budget for agencies in '55

14 Fast start on chemical decisions in Supreme Court

15 Pfizer patent on tetracycline granted, but fight will continue

18 Spurt in chemical expansion in Mississippi sets pace for industrial development

22 Survey of mandatory retirement reveals split views, rugged opinions

26 What protection do you get from plant insurance? Ethyl's lawsuit holds key

30 Impact: Effect of king-size cigarettes on chemical sales

34 PRODUCTION
Nitric pulping piques papermakers' interest anew

38 Drum rack eases storage, speeds handling

49 RESEARCH
Commercial labs charge new tax law encourages competition by tax-exempt research institutes

54 New chemical cuts soot as heating-oil additive

62 DISTRIBUTION
How Cyanamid is staffing to cope with tomorrow's purchasing problems

73 MARKETS
Market Letter

77 What's happening in silicofluorides?

82 SPECIALTIES
Additives to improve residual fuel oils attract specialty makers

84 Nine promising new weed killers

Behind the News

GEORGE is an unusual name for a Japanese. But CW's Tokyo correspondent, Riichi (call me George) Inagaki is an unusual fellow.

He has to be to cover the week's news for you on a beat that bristles with a unique set of Oriental obstacles.

Biggest single hurdle, George says, is to corner a Japanese chemical man for an interview—since most of them spend only an hour or so a day at the office. Here's the typical executive's schedule:

10:30-11:00	Arrives at the office.
10:00-12:00	Attends committee meetings.
12:00- 3:00	Lunches.
3:00- 6:00	Sojourns to the local golf club.
6:00-10:00	Dines (usually on the outskirts of town) with business friends.

Now and then this hardly demanding routine is burdened by an additional late afternoon hour of office work. But fortunately (for George, who isn't a golf enthusiast) financial men, those with trading companies, and government officials pursue a more U.S.-like routine. They're nine-to-fivers and George gets to chat with them more regularly.

Too, some of the top men in the rising chemical industry are his personal friends. A number were classmates at the Tokyo Imperial University; some, like 38-year-old George, graduated before World War II with degrees in economics and today hold top-echelon jobs with the Japanese government.

The daily commute from the same Tokyo suburb (Setagaya) also helps him keep in contact with what's going on. Practically all Japanese chemical companies today have offices in Tokyo's Marunouchi District (Japan's Wall Street) where our News Bureau is headquartered. Riding back and forth on the 12-mile jaunt by subway (at a cost of five yen or approximately a quarter of a cent), gives George a chance to chat with chemical friends, glean an inside view of behind-the-scenes events.

Of all the stories George has rounded up for us during the past year, there's one that pleased him particularly. That was the piece he did on the U.S. Army hydroponic farm development—a 55-acre project on an airstrip formerly used by Kamikaze hell-divers.

Pushing the story through a snarl of red tape and protocol left George unperturbed. In his own words (his English is masterful, but enriched by a series of delightful idioms) here's what happened:

"I have completed the story on hydroponic farming and took plenty of pictures, too. But now it must be cleared by the commanding officer of the farm and the Tokyo Quartermaster Depot. The story is in their hands and I am putting a heat on them for prompt clearance. Army being an Army, this is the best I can do.

"I spent an entire day at the farm. The commanding officer—a colonel—was very nice. But before I could go to see the farm I had to see a captain, a major, and another colonel. They were all very nice. . . . BUT they still have the story. . . . So I hope you'll have a little patience, while I am putting a heat on the friendly colonel.

"He gave me a lot of lettuce and tomatoes to take home to my wife. I thanked him very much and rushed back home to supper time. I started working on the story right after and finished it at midnight.

"Had a wonderful day."

To which appreciative New York editors murmur Amen. Such enthusiasm is a news-gathering plus. It's particularly valuable in a reporter covering a section of the world's chemical industry that seems sure to have an increasing impact on U.S. producers in the year ahead.

Editor

OPINION...

Tens of Thousands

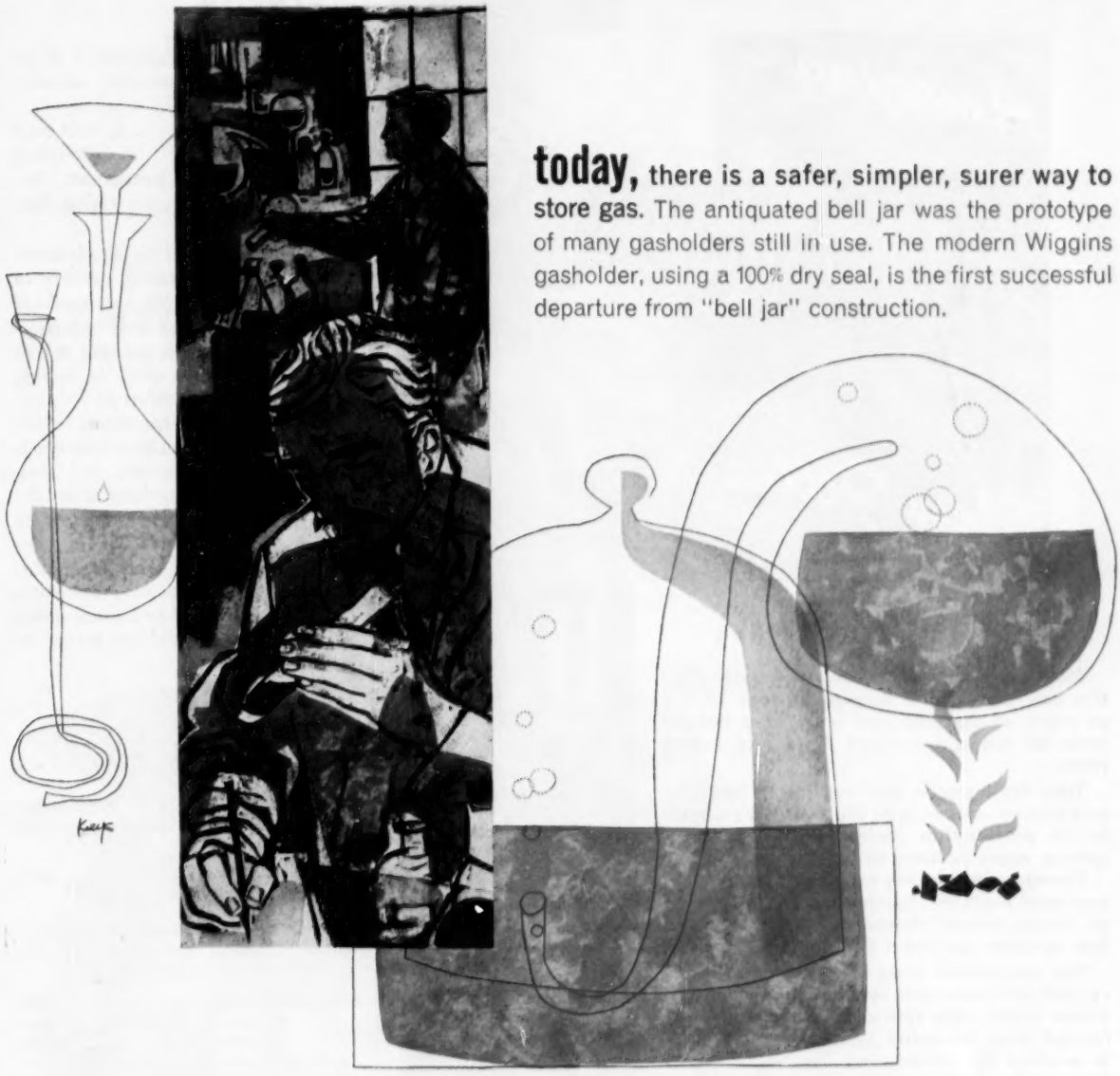
TO THE EDITOR: We wish to register a strong protest at the treatment received in the story "Supplying the Edge" (*Dec. 25, p. 62*).

We strongly object to the undisguised attempt to belittle our engineering and production achievement in being first to commercially produce the silicon transistor. We have been in steadily increasing production of silicon transistors since May, 1954. In September, the line was broadened from three to five types, and in December—although still the sole commercial producer—we reduced the prices by 25%, as a result of manufacturing experience gained in the production of tens of thousands of silicon transistors . . .

General Electric today may well be in "1948" with silicon. We, having far greater experience with both silicon and germanium transistors, are of the opinion that, in many respects, silicon transistors are in an equivalent production position with germanium and that both have specific application areas.

Our achievement in being first to commercially produce transistors of a material other than germanium (silicon, with its advantages of high-temperature and high-frequency operation) has been quite well chronicled in the electronics press.

We feel that, in fairness, you should

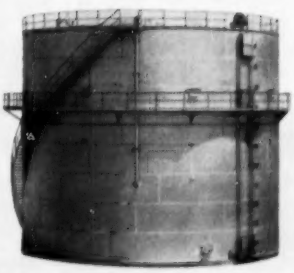


today, there is a safer, simpler, surer way to store gas. The antiquated bell jar was the prototype of many gasholders still in use. The modern Wiggins gasholder, using a 100% dry seal, is the first successful departure from "bell jar" construction.

WIGGINS GASHOLDER

BY GENERAL AMERICAN

Only modern Wiggins Gasholders free you from weather worries and operating costs. More than 150 satisfied users now enjoy the advantages (no water, tar or grease) that this 100% dry-seal gasholder offers. The Wiggins Gasholder can be built to any capacity . . . with remarkable savings in construction cost. If there's a gas storage structure in your firm's future, write today for full information.



for chemical process and industrial gases

WIGGINS VAPOR SEALS GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South LaSalle Street
Chicago 90, Illinois

Offices in Principal Cities

THE EIMCO BURWELL

Plate and Frame Filter users will appreciate this new Eimco filter because it does EASILY so many of the jobs that were long tedious tasks on the conventional Plate and Frame Filter.

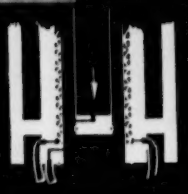
Take for instance the long job of opening and closing — now, with the Eimco, it's a matter of push-button control with instant response, takes no time at all.

Cleaning, which may take hours on the conventional machine, requires no down time on an Eimco, simply rotate the cleaned frame into position and start filtering again.

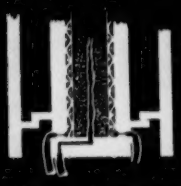
You get several times the washing efficiency with an Eimco over conventional plate and frame filters. The split cake which is evenly formed over the entire surface of each plate is washed by introducing the wash water through the feed port. Thus both surfaces of filter media are utilized for the outward passage of wash liquor, instead of only one surface as on conventional plate and frame filter. Washing efficiency is, therefore, at least doubled.

One hundred square feet of filter area on an Eimco Burwell filter is equal to 5, 10 or 20 times that amount of area on a conventional plate and frame filter.

Write for complete information.



Plates open to allow frame to enter and position for filtering.



Plates closed on frame — in this position the feed, wash and blow portion of the cycle are completed.

Plates open to allow filled frame to move down and out.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milan, Italy

OPINION . . . . . .

present a more factual analysis of the state of silicon transistor development . . .

S. T. HARRIS
Vice-President
Texas Instruments, Inc.
Dallas, Tex.

Our report concerned the development of a process by General Electric to make an extraordinarily pure grade of silicon—which can be used in transistors. Reader Harris is pointing out, in the main, that we erred in saying, parenthetically, that "thus far only experimental silicon transistors made from a Du Pont silicon have been available." Our other comment, that "they reportedly leave something to be desired in the way of performance," is true as said—i.e., perfection in transistors has not yet been achieved. Nonetheless, we'll agree that this statement might have led to a condemning inference that we did not intend to imply.—ED.

DATES AHEAD . . .

Plant Maintenance and Engineering Show, International Amphitheatre, Chicago, Jan. 24-27.

Chlorine Institute, annual meeting, Biltmore hotel, New York, Jan. 26.

Assn. of American Soap and Glycerine Producers, annual convention, Waldorf-Astoria hotel, New York, Jan. 26-28.

Instrument Society of America, symposium on methods of instrumental analysis, Auditorium of the Western Society of Engineers, Chicago, Feb. 7-8.

Chemical Institute of Canada, protective coatings division conference, Royal York hotel, Toronto, Feb. 24; Ritz Carlton hotel, Montreal, Feb. 25.

Drug, Chemical and Allied Trades section of the N.Y. Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 3.

National Farm Chemurgic Council, annual chemurgic conference, Deshler-Hilton hotel, Columbus, O., March 22-24.

World Plastics Fair and Trade Exposition, National Guard Armory, Los Angeles, April 6-10.

American Drug Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 13-14.

The American Oil Chemists' Society, annual meeting, Roosevelt Hotel, New Orleans, April 17-20.

New! Lighter, tougher plane bodies

for *Taylorcraft*

with **POLYLITE**

Polyester Resins

● *"Has a backbone and hide as tough as an armored tank!"* That's what Ben J. Mauro, President of Taylorcraft, Inc., says about the new Taylorcraft plane — with its plastic exterior achieved by combining Reichhold's POLYLITE Polyester Resins with fibrous glass.

As one of the top three builders of small aircraft under $10,000, Mr. Mauro calls this new advance in his field "the first major development in over fifteen years".

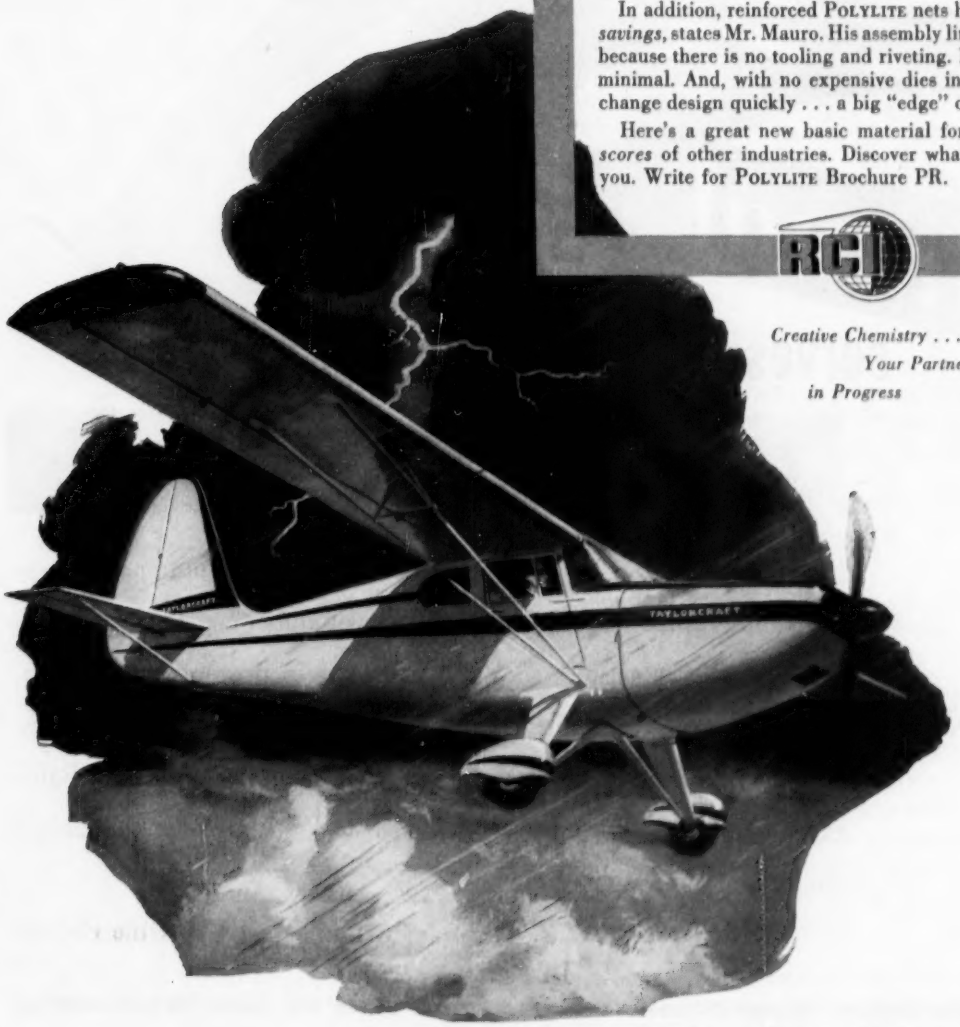
Says Mr. Mauro of this POLYLITE-fibrous glass body: "It gives the small plane owner many advantages he never dreamed possible". Among these he lists: "Lighter weight combined with greater strength-to-weight ratio and tensile strength . . . increased safety . . . reduced maintenance costs . . . more speed . . . excellent resistance to corrosion and agricultural chemicals . . . superior thermal and acoustical properties."

In addition, reinforced POLYLITE nets him *production savings*, states Mr. Mauro. His assembly line moves faster because there is no tooling and riveting. His tool cost is minimal. And, with no expensive dies involved, he can change design quickly . . . a big "edge" on competition.

Here's a great new basic material for aviation, and *scores* of other industries. Discover what it can do for you. Write for POLYLITE Brochure PR.

RCI

Creative Chemistry . . .
Your Partner
in Progress



REICHHOLD

Synthetic Resins • Chemical Colors • Phenol • Glycerine
Phthalic Anhydride • Maleic Anhydride
Sodium Sulfate • Sodium Sulfite

REICHHOLD CHEMICALS, INC., 525 NORTH BROADWAY, WHITE PLAINS, N. Y.

mutual serves industry with Chromium Chemicals

The industries in which Chromium Chemicals find important applications are many and varied, with their number constantly expanding as new uses arise — such as Chromates in preventing corrosion.

Mutual serves industry widely — and well. Highest purity Chromium Chemicals are available for prompt shipment from Mutual's Baltimore plant or from dealer's warehouse stocks throughout the United States and Canada.

Write for quotations or the name of the nearest Mutual distributor.

Sodium Bichromate • Sodium Chromate • Potassium Bichromate • Ammonium Bichromate • Chromic Acid • Koreon (one-bath chrome tan)

MUTUAL CHEMICAL COMPANY
OF AMERICA
SINCE 1845
99 PARK AVENUE • NEW YORK 16, N.Y.

Allied Chemical

Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

There'll be a lot of interest in a process just put on stream by Colorado Fuel & Iron at its Pueblo mill. It converts coke-oven ammonia to diammonium phosphate rather than the conventional, less marketable ammonium sulfate. CF&I says it's the first major coke-oven operator to make such a move.

A plant test last summer, with the aid of Monsanto and Koppers technicians, preceded the recently completed changeover.

Essentially, the process change consists of absorbing the ammonia in furnace-derived phosphoric acid rather than sulfuric acid, but closer control is necessary to insure proper crystallization of the product.

CF&I will market the fertilizer material as "Dap" in the Western states, expects it to compete handily with the lower-analysis sulfate and triple superphosphate. (The three materials contain, respectively, 74%, 20.5% and 50% utilizable plant nutrients.)

•

Another process—the diarylethane synthesis—underlies an ambitious project that American Cyanamid is now undertaking. The company has broken ground at Wallingford, Conn., for a 40 million lb./year plant to make thermoplastic molding compounds—and marking Cyanamid's initial plunge into that field.

Principal raw material will be methylstyrene (vinyltoluene) from Cyanamid's Fortier (La.) plant. Dow Chemical also makes this monomer, but by alkylation of toluene; Cyanamid will use a new, patented synthesis involving the catalytic cracking of ditolylethane (which is formed by the reaction of toluene with acetylene or acetaldehyde) to o- and p-methylstyrenes and toluene.

Ramifications of the synthesis don't end there. Xylenes can be used in place of toluene, yielding dimethylstyrenes and p-xylene.

•

A bumper crop of new products this year is foreseen by Charles Kimball, president of Midwest Research Institute—"and the number will increase in subsequent years." Other trends he notes:

- Emphasis on reduction of operating costs.
- Forward integration—i.e., "general movement of industries to markets rather than sources of raw materials."

•

Australians have developed a trick to save water. Tests conducted by the Commonwealth Scientific and Industrial Research Organization show that the evaporation rate from reservoirs can be cut at least 30% by addition of cetyl alcohol. Crystals of the compound, which can be obtained from whales, are simply scattered over the water surface, whereupon they form a thin film.

A series of tests will be made on a 250-acre reservoir at Umberumberka Dam, into which water now has to be pumped during the dry season at a cost of $2.35/1,000 imp. gal. The cetyl alcohol treatment is estimated to cost 0.5¢ for the same quantity of water.

•

Is food and drug law enforcement adequate? That's the question confronting a committee of 14 citizens named this week by Health-Educa-

tion-Welfare Secretary Oveta Culp Hobby. The committee has $21,000 of federal funds to study the question and make recommendations. Among industry representatives on the panel: Cullen Thomas, General Mills; Frank Abrams, formerly with Standard Oil; Robert Hardt, Hoffman-La Roche; H. N. Riley, H. J. Heinz, Walter Silbersack, American Home Products; and Gregory Thomas, Chanel, Inc.

•

New assistant administrator of Business & Defense Services Administration is Arthur Winston, assistant manager of Dow's magnesium department. He replaces R. G. Boyd, Kaiser Aluminum & Chemical, and will supervise BDSA's four metal divisions.

•

You can reasonably expect the joint congressional atomic energy committee to extend to ten years the period (now five years) during which patents in the atomic field are subject to compulsory licensing. The 1954 atomic energy law set a five-year limit, but the Democrats—now in control of Congress—want a longer period whereas the Republicans would prefer to abolish compulsory licensing.

•

Farmers' cooperatives sold some $216 million's worth of fertilizers in fiscal 1953—up 18% over the previous fiscal year, according to figures just released by the Dept. of Agriculture. Insecticide sales—almost $24 million—were down 3%.

•

Good news for chlordane makers is USDA's allowance of higher concentration of the insecticide in packaged products—from 2½% to 3% in emulsions and solutions; 5% to 6% in powders; 2% to 3% in Aerosol sprays. Reason for the higher limits: manufacturers have been able to cut down the hexachlorocyclopentadiene impurity in technical-grade chlordane.

•

Will the I. G. Farbenindustrie splinters recoalesce? The Allied High Commission is concerned about that possibility as it prepares to turn over to the West German government—perhaps within the next week or two—responsibility for completing liquidation of the former cartel. One piece of evidence indicating that the Germans may not undo the Allies' undoing: a 1944 memorandum, found in I. G.'s files, showing that the directors themselves thought that the cartel had grown too large and complex for efficient operation.

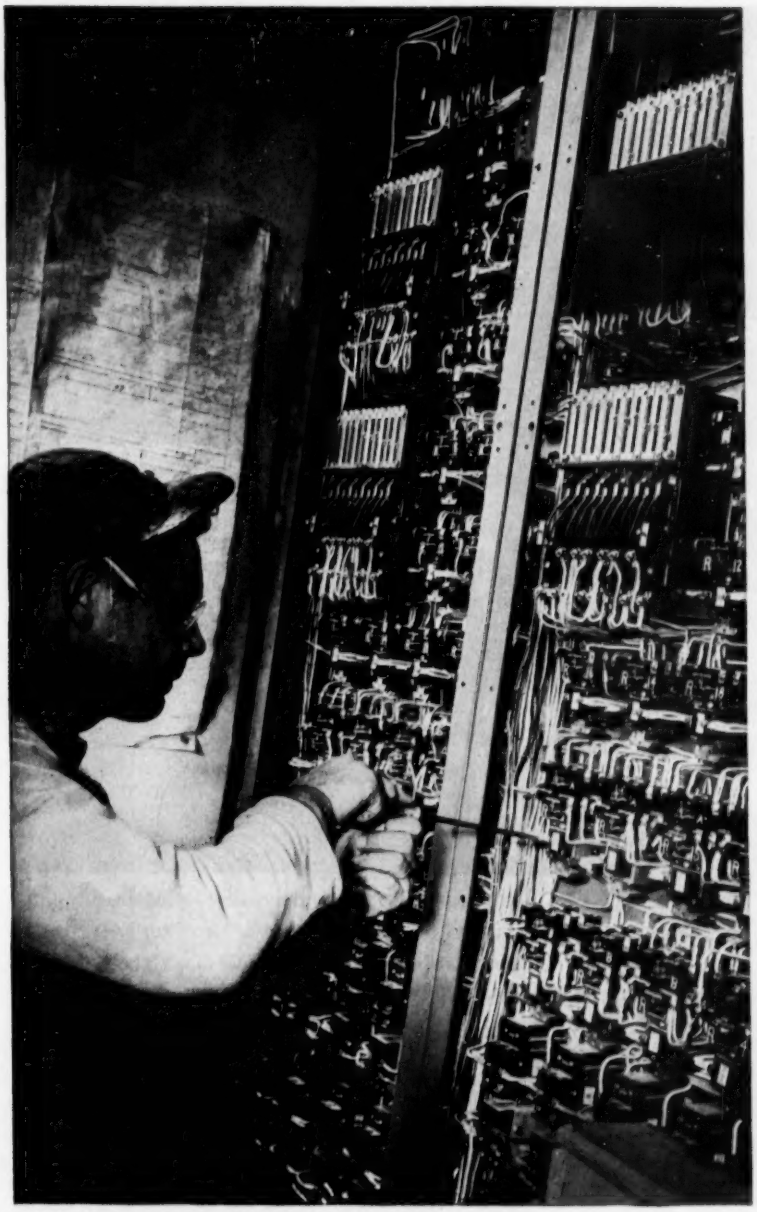
Even if the West German facilities of the old I. G. were rejoined (they're now spread among five companies), the combine wouldn't be the colossus it once was: 65% of the physical assets were in East Germany.

But continental investors, apparently, look for a recombination. Prices of the stock of the two major splinters, Bayer and Hoechst, have jumped in the past few weeks—and those two firms would profit most from integration.

•

You'll be wearing heliotrope-trimmed shoes if a segment of the process industries gets its way. Dewey and Almy division of W. R. Grace is showing men's shoes with two-color vinyl welting—five basic colors and nine accent colors including heliotrope and pink.

. . . The Editors



HERCOFLEX 150 IS MADE FOR LIVE WIRES

Complicated electrical installations, like this "switch board" which operates the centrifuge at Hercules' plant in Mansfield, Massachusetts, give longer, more dependable service when vinyl wire insulation is made with Hercoflex 150.

Hercoflex 150, one of a number of Hercules vinyl plasticizers, retains its high dielectric strength even after prolonged exposure to high temperature. And the broad range of useful temperatures observed in vinyls plasticized with Hercoflex 150 is making it increasingly popular not only for extruded wire coatings but also for cable-jacket stock.

Compatible with most primary and secondary vinyl modifiers, Hercoflex 150 can be processed quickly and economically with the various vinyl chloride polymers and copolymers. It has unusually low volatility and is always uniform in quality, properties, and performance.

Hercoflex 150 is readily available. For additional technical data, write Hercules.

HERCOFLEX® VINYL PLASTICIZERS

- **150** (di-N-octyl, decyl phthalate)
- **200** (di-iso-octyl phthalate)
- **290** (di-N-octyl, decyl adipate)

Synthetics Department

HERCULES POWDER COMPANY

INCORPORATED

992 Market Street, Wilmington 99, Delaware

SHS4-2

Here's a real acid test!

3,000 feet of U. S. Uscolite Pipe unharmed after 2 years' steady drinking of acid

Section of three U.S. Uscolite Pipes in color mixing section of wallpaper plant. The pipes carry corrosive solution for fixing the print on wallpaper.

Uscolite pipe and fittings are made in the broadest and largest line of stock sizes on the market. Sizes run from ½" to 6".

A wallpaper plant in Illinois changed ideas about piping when U. S. Uscolite® Pipe was installed in the two pipe lines that handle corrosive materials. (One line handles a corrosive solution used to fix the print on the wallpaper; the other handles 10% hydrochloric acid dye solution.)

Before Uscolite was put in, the piping in the plant lasted about 3½ years. But U. S. Uscolite, 3,000 feet in all, has so far been on the job 4 years—with no deterioration whatever. Moreover, the Uscolite piping is exposed to accidental knocks and physical abuse all along the line, yet its high impact strength protects it from harm. Based on its present performance, it looks like it will last for years and years.

A product of United States Rubber Company, Uscolite piping is, despite its strength, very light in weight. It resists, inside and out, the corrosive action of acids, salts, alkalies and fumes. A complete line of pipe, fittings and Uscolite (Hills-McCanna) valves is available for any and all piping problems.

Rid yourself of any problems in carrying corrosive materials; get in touch with any of the 27 "U. S." District Sales Offices, or write address below.

"U.S." Research perfects it..."U.S." Production builds it... U.S. Industry depends on it.

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N.Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

BUSINESS & INDUSTRY . . .

Chemical Highlights of Budget Message

(All expenditures in millions of dollars)

Agency	Actual (Fiscal '54)	Estimated (Fiscal '55)	Proposed (Fiscal '56)
Commerce Dept.			
National Bureau of Standards	$8.8	$6.8	$8.0
Total NBS research and development	6.3	4.4	5.3
Business & Defense Services Administration	(1)	5.8	7.0
Patent Office	12.0	11.5	12.0
Health-Education-Welfare Dept.			
Food & Drug Administration[2]	5.2	5.1	5.5
Total FDA research and development	0.9	0.9	0.9
Pollution and Sanitary Engineering[3]	3.4	3.5	5.0
Interior Dept.			
Bureau of Mines*	15.5	13.4	13.0
Saline Water*	0.2	0.5	0.4
Justice, Antitrust Div.	3.0	3.1	3.1
Federal Trade Commission	4.2	4.1	4.3
National Science Foundation	6.4	10.1	21.0
Total research and development	4.3	7.3	17.4
TVA research and development on resources, fertilizer	2.2	2.1	2.2
GSA critical material stockpile	650.6	994.0	783.0
FFC synthetic rubber research	4.8	4.2	4.2
Tariff Commission	1.3	1.3	1.4
Defense Dept.			
Total research and development	1530.0	1457.0	1518.9
Plant increase	145.2	150.0	150.0
Atomic Energy Commission	783.5	1189.2	1455.4
Total research and development	274.3	288.7	344.0
Plant increase*	44.8	50.4	64.6
Reactor development[3]	70.6	84.9	112.6
Chemistry, physics[3]	38.4	39.8	43.4
Medicine, biology[3]	24.5	26.5	26.4

(*) Research and development.
(1) New agency in fiscal '55.
(2) Does not include certification and inspection service spending of $1.0-, $1.1-, $1.2-million, respectively.
(3) Includes research and development plant spending.

Shifting Upward Again

Though the budget President Eisenhower submitted to Congress last Monday includes a $1.1-billion drop in the total amount the government will spend during the 1956 fiscal year, the figures of primary interest to the chemical industry are trending upward.

Of the 25 spending categories listed above, the President recommends an increase in 17; he'd keep four the same, reduce four.

While the over-all total of the President's spending budget is down 2%, spending for the many research and development activities of the government will be up by 7%.

Notable in such an increase are the boosts in spending on defense research, which make up some two-thirds of all federal research—which, in turn, is about half of the total for public plus private spending.

The President had some words on government competition: "We are moving ahead in taking the government out of business wherever this can properly be done. . . . Most of the synthetic rubber plants have been sold to private purchasers, subject only to Congressional approval . . . we have already sold or shut down . . . plants for processing scrap and manufacturing paint and chlorine."

The comment on paint, however, is perhaps premature. While the Defense Dept. is about to order the Navy to close down its paint factories at Norfolk, Va, and Mare Island, Calif., they are still operating at a 2.5-million-gal./year rate.

Federal regulation—as well as competition—will change next year. Where the Antitrust Division of the Justice Dept. and the Federal Trade Commission will operate at about current levels, the Food & Drug Administration is due for a $386,700 increase in funds, bringing it up to a total only slightly less than it had under the Democratic administration.

The patent office, too, will receive more money. Where the Budget Bureau okayed an $11-million request for fiscal 1955 and Congress granted $11.5, the Office's request for fiscal 1956 (starting July 1) is back at its traditional $12 million/year level.

The Commerce Dept.'s Business and Defense Services Administration is also up for an increase. One reason: the Agency's Chemical and Rubber Div. now has 40 employees—up from 32 a year ago.

Congressional appropriation committees could tone down the President's requests of course, but right now it looks like a good year for Government agencies involved in chemical affairs.

CHEMICAL CASES BEFORE SUPREME COURT

To Be Argued Soon

CELLOPHANE ANTITRUST—on appeal from district court's decision that Du Pont's cellophane business is not a monopoly.

PLASTICS LABOR—on appeal from circuit court's ruling that AFL unionists had right to strike against Mastro Plastics Corp.

PROCESSOR'S TAXES—on appeal from circuit court's finding that Corn Products Refining Co. can't use "capital gains" clause.

Decided Last Week

INDUSTRIAL DEVELOPMENT—California wins a point in six-state battle over who gets how much water from Colorado River.

STATE COURT—Minnesota Mining & Mfg. Co. loses its bid to have Florida lawsuit quashed.

Shorthanded High Tribunal

There's no telling how long the U.S. Supreme Court may have to wait for its ninth member,* but meanwhile the high tribunal is chugging ahead with a bulging docket that includes a number of cases of chemical process interest.

The eight-man court—which now is in recess until Jan. 31, with the justices working on various opinions—is expected to schedule arguments soon on the most significant chemical suit now pending. This is the government's appeal of the cellophane antitrust action, which so far stands as a victory for Du Pont. Arguments probably will begin early next month.

Last year at Wilmington, a district court judge had absolved Du Pont of charges that it has monopolized the business. The Justice Dept. contends that decision is based on an "erroneous interpretation" of the Sherman Act. The court threw out the charges—despite the government's showing that Du Pont controls 75% of the cellophane market—because the judge was convinced that cellophane has to compete with a wide range of other flexible packaging materials and Du Pont does not have a monopoly position in this broader field.

Plastics Workers' Strike: Later this year, the Supreme Court will decide whether strikes called without notice to employers are legal under the Taft-Hartley law. Last week, the shorthanded court agreed to review a case involving two plastics companies that operate out of one plant—Mastro Plastics Corp. and French-American Reeds Mfg. Co., New York—and Local 3127, Brotherhood of Carpenters & Joiners (AFL).

The National Labor Relations Board found that the employer had engaged in unfair labor practices by trying to get its employees to join a different labor union, the AFL Paper Workers. When the company fired one of the principal opponents to this switch, practically the entire plant force walked out. Both NLRB and the Second Circuit Court of Appeals decided that 76 of these strikers were entitled to be reinstated to their former jobs. The plastics firms opposed this, arguing that Taft-Hartley requires a union to give 60 days' notice before striking to end or modify a contract. In addition, the contract in effect at the time contained a "no strike" clause.

The court also consented to hear arguments in Corn Products Refining Co.'s dispute with the Internal Revenue Service. That agency, the U.S. Tax Court, and the Second Circuit Court of Appeals all have ruled that the companies' transactions in corn futures are taxable as ordinary income, not as capital gains.

The complex lawsuit between Arizona and California is expected to be a limiting factor in chemical industry expansion in Southern California, where fresh water is at a premium. At issue: how to divide up water from the Colorado River. Last week, the high court gave California 30 days in which to reply to papers filed by Colorado, Wyoming, Utah and New Mexico.

Minnesota Mining & Mfg. Co. lost out in its move to kill the state court lawsuit pending against the company in Florida. The firm contended that the Florida court had no jurisdiction over 3-M, because the company's only activity in that state is soliciting of orders through traveling salesmen.

In the cellophane case, the court won't gain anything by waiting for its new member to be sworn in because it's seen as certain that Harlan—who represented Du Pont in other cases—will disqualify himself from the cellophane suit. But on other cases, Chief Justice Warren and colleagues feel that nine justices are none too many for the court's work-load—which this year may reach record proportions.

* What with Sen. William Langer (R., N.D.) threatening to stage a one-man blockade against confirmation of the appointment of John Harlan—to show that Langer feels more people from his state should be chosen for federal jobs.

Fresh Slant on Giving

Newest phase in Du Pont's 37-year-old aid-to-education program is a $75,000 grant to high school science teachers.

Largely experimental with chemical companies until now, the obvious aim of such a program is to bolster the number of science teachers, now rapidly declining, in U.S. public high schools. On such instructors, depends, in large measure, the supply of future science graduates available to the chemical industry, Du Pont reasons. "It's during early high school years," points out one company spokesman, "that many career decisions are formed. No industry group, and particularly a rapidly expanding industry already confronted with severe technical manpower shortages, can afford to lose any major source of future manpower." And that's just what the chemical industry stands liable to do if it overlooks aid to science teachers much longer.

In all, Du Pont is awarding $800,000 in grants to colleges and universities this year. But the grant to high school teachers is the grant to watch. It could set a whole new pattern for corporate giving.

WIDE WORLD

SECRETARY HOBBY: For pesticide makers, a boost in granary business.

Rats Take The Rap

All of a sudden, business is looking up for chemical companies that make fumigants and rodenticides for grain—all because of policy switch within the federal government.

After two years of parleys between officials of the Agricultural Dept. and the Health, Education & Welfare Dept., H-E-W's Food & Drug Administration has been given a clear track to resume inspection of interstate wheat shipments. Under the order issued last week by H-E-W Secretary Oveta Culp Hobby, FDA inspectors will have authority to seize shipments not meeting the agreed-on standard—not more than one rodent pellet per pint of grain.

FDA's grain-checking activities were suspended two years ago when Agriculture objected at "too stringent" standards that might "badly upset the economic movement of wheat." Now, FDA is essentially doing business at its same old stand, Agriculture officials having swung around to the view that enforcement procedures are no tougher than they should be.

Spot-check Drive: Present estimates are that as the inspecting service gets started again, some 2-3% of grain shipments sampled will be found substandard. However—because about 50 million bu. of wheat are consumed in the U.S. each month—it'll be virtually impossible for FDA's limited inspection corps to check all shipments.

One way in which FDA's spot-checking may be reinforced: Agriculture officials are considering a proposal that they adopt FDA's "pellet-in-a-pint" rule for all the wheat (presently about 900 million bu.) held by the government's Commodity Credit Corp. In effect, this would add several hundred CCC inspectors to supplement the score or so of FDA inspectors operating in grain areas.

As things stand now, operators of country grain elevators will be most directly affected by the renewal of FDA inspections, because their bins are the points from which most grain moves into interstate commerce. There's a good chance, too, that responsibility may be shifted back one level—to the farmer. Under serious consideration is an Agriculture plan for revising grain loan rules so that farmers could get U.S. loans only on grain meeting FDA requirements.

It's clear now that grain inspection was one thing President Eisenhower was alluding to in his recent "state of the union" message in which he called for "better consumer protection." The administration's new-found unanimity on this point augurs a brighter 1955 for chemical firms in the field.

Merger Looming

Hooker Electrochemical Co. (Buffalo) and Durez Plastics & Chemicals, Inc. (North Tonawanda, N.Y.) are negotiating to merge on the basis of one share of Hooker for each share of Durez held.

Letters of intent have been signed by both companies; Durez directors have declared a 10% stock dividend in anticipation of the move (increasing the number of shares of common outstanding from 1.5 million to 1.65 million shares).

Hooker, company spokesmen point out, has been selling tank-car lots of aluminum chloride and caustic soda to Durez for some years, has also been making sorties into the general field of plastic manufacture. (Hooker at present produces Hetron resin—a polyester.)

Official name for the merged firm has not yet been released, but it's an odds-on bet that the Hooker Electrochemical name will be retained in some form. Final decision should come within the next week.

LLOYD CONOVER: In 5-firm drug fight, his patent puts Pfizer ahead.

Not Retreating

There was joy in Brooklyn on Tuesday last week, when Chas. Pfizer & Co. received U.S. Pat. 2,699,054 and thereby inched ahead in the five-firm fracas over tetracycline; but Bristol Laboratories—although jolted at first—has refused to retreat.

News that the Patent Office has recognized the tetracycline process devised by Pfizer chemist Lloyd Conover was the main factor in Wednesday's stock price fluctuations—a 2¼-point rise for Pfizer, a 4⅛-point drop for Bristol's parent company, Bristol-Myers. But by late Friday afternoon, Pfizer stock was ¼ point above Wednesday's close while Bristol common had regained 1¼ points.

Last week's episode leads to these prospects for the future:

- Pfizer, Bristol, and American Cyanamid's Lederle Laboratories Division to keep on manufacturing tetracycline* and they and Bristol distributors Squibb and Upjohn to keep on marketing the product.
- Pfizer to prosecute the infringement suit it filed in federal court at Atlanta (on the day the patent was issued) in an attempt to stop Bristol's Polycycline producion; Bristol to contest the case "very vigorously."
- Bristol to continue pressing its own application for a patent on a

* Tradenames for this wide-spectrum antibiotic: Pfizer's Tetracyn; Bristol's, Polycycline; Lederle's, Achromycin; Squibb's, Steclin; Upjohn's, Panmycin.

tetracycline process; Pfizer to contend that its product is supreme.

• Lederle to collect royalty under its new license to Bristol, and to pay royalty under its previously arranged license from Pfizer. (The Cyanamid-Bristol lawsuit filed last September is to be dropped.)

Pfizer says the Lederle-Bristol license under Lederle's aureomycin patent doesn't change Bristol's position in the tetracycline field.

Though the whole affair is still wide open, it's apparent that Pfizer has improved its position since Cyanamid bought Heyden's antibiotic interests *(CW, Nov. 14, '53, p. 15)*.

EXPANSION. . . .

Ammonia: U.S. Industrial Chemicals Co., a division of National Distillers Products Corp., has formally dedicated its $7-million synthetic ammonia and nitrogen fertilizer plant at Tuscola, Ill. Lying adjacent to USI's sulfuric acid plant (which came on steam in Sept. '53), the ammonia works use by-product hydrogen piped from National Petro-Chemicals' nearby plant. Ammonia capacity: 50,000 tons/year. Chief marketing area: Illinois, Indiana, Ohio, Michigan, Wisconsin, Minnesota, Iowa and Missouri.

•

Lithium Concentrates: Formal dedications ceremonies were also on tap last week at Lithium Corp. of America's new $7-million lithium concentrates plant at Bessemer City, N.C. Over 100,000 tons of raw ore, mined by the open-cut method, in the King's Mountain area, are stockpiled, ready for processsing; company spokemen plan also to process lithium concentrates shipped in from other locations.

•

Pulp: MacMillan & Bloedel, Ltd. (Vancouver, B. C.) will build two pulp mills at a total cost of $30 million. Capacity: 300 tons/day of newsprint, 100 tons of kraft paper.

COMPANIES. . . .

Early company earnings:

• Dow Chemical Co. (whose fiscal year ends May 31) reports sales for the six months ending Nov. 30 at $222 million compared with $212 million in 1953; net profits at $16.7 million compared with $16.5 million. Reason for a dip in pretax earnings from $34 million to $33 million: increased depreciation and amortization charges.

• Monsanto Chemical Co. reports unaudited sales for the entire year 1954 of $341.8 million—an increase of 0.7% over 1953; net profits of $23.5 million (after preference dividends) or $4.39/common share—a drop of 45¢ from 1953.

•

B. F. Goodrich Co. has signed an agreement with Veith-Gummiwerke (Frankfurt, Germany)—one of Germany's largest rubber- and plastics-producing companies. Terms of the pact call for Goodrich-Supplied technical assistance in return for a fixed percentage of Veith proceeds over the next decade.

•

Anglo-Canadian Pulp and Paper Mills Ltd. has been granted a 1-year extension on its option on Candle Lake, Saskatchewan, where it hopes to build a $30-million pulp mill. New expiration date: Dec. 30, 1955. Under terms of its agreement with the Saskatchewan government, Anglo-Canadian must start construction work by May 1, 1956, if it chooses to exercise its option on the 2000-sq.-mile tract.

•

The Louisville Cement Co. and its manufacturing subsidiary, the Louisville Cement Corp. of Indiana have merged.

•

More recent company incorporations at Dover, Del., and authorized capital stock:

• Acme Chemicals, Inc., $250,000; subscribed stock, $300.

• International Sulphur Corp. (authorized stock not revealed).

• El Centro Uranium Mining Co., Inc., $500,000.

• Minnesota Uranium, Inc., $100,000.

• Sodak Uranium and Mining Co., Inc., $40,000.

• Three States Natural Gas Uranium Corp., $50,000.

• Uranium Enterprises, Inc., $75,000.

Amateurs Too Costly

USE OF ARBITRATION in chemical industry labor relations now has reached the point where use of well-meaning but inexperienced amateur arbitrators can lead to complications that may be more costly than use of professional arbitrators. This was one point on which all panelists agreed at the recent New York meeting of officials of American Cyanamid and International Chemical Workers Union (AFL). Left to right: Vice-President Joe Donovan and Research Director Otto Pragan, ICWU; Aaron Horvitz, New York arbitrator; and Cyanamid's William Karpinsky, labor relations supervisor for organic chemicals division, Bound Brook, N.J. Also speaking: Edward Moffett, ICWU president.

A QUALITY CHOICE OF THE WORLD'S LEADING SYNTHETIC DETERGENT PROCESSORS!

NEOLENE 400

INTERMEDIATE FOR SYNTHETIC DETERGENTS

From its introduction, Neolene 400 has been recognized for quality as a raw material for synthetic detergents and other surface-active agents of the alkyl aryl sulfonate type. Today Neolene 400 exhibits exceptional quality when used in the newest method of sulfonation — utilizing liquid SO_3.

Neolene 400 is one of the many petrochemical products produced by Continental Oil Company. For Neolene 400, for slurry, or for finished detergent products, look to Conoco Petrochemicals. *Samples and technical information, based on pilot plant or commercial production, furnished by request on your letterhead.*

CONOCO
PETROCHEMICALS

Petrochemical Know-How from the Ground Up!

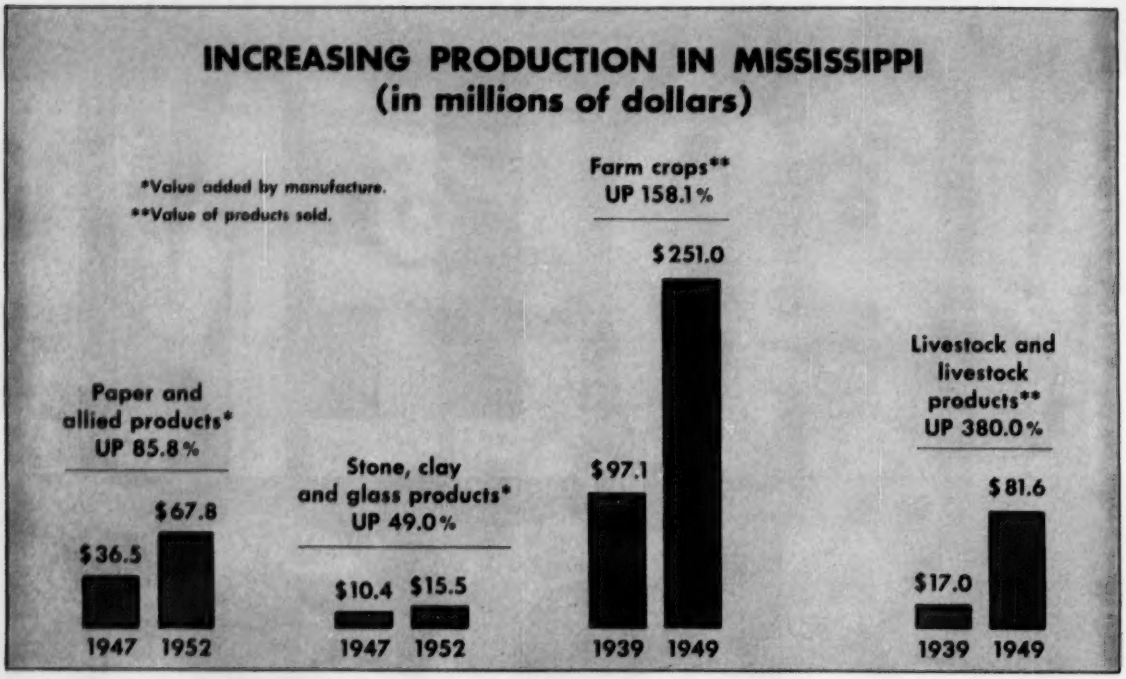
CONTINENTAL OIL COMPANY

PETROCHEMICAL DEPARTMENT DIVISION C1

630 Fifth Ave., New York 20, N. Y. 1353 No. North Branch Street, Chicago, Ill.

Export: Airco Company International, 60 East 42nd Street, New York 17, New York

© 1964, Continental Oil Company

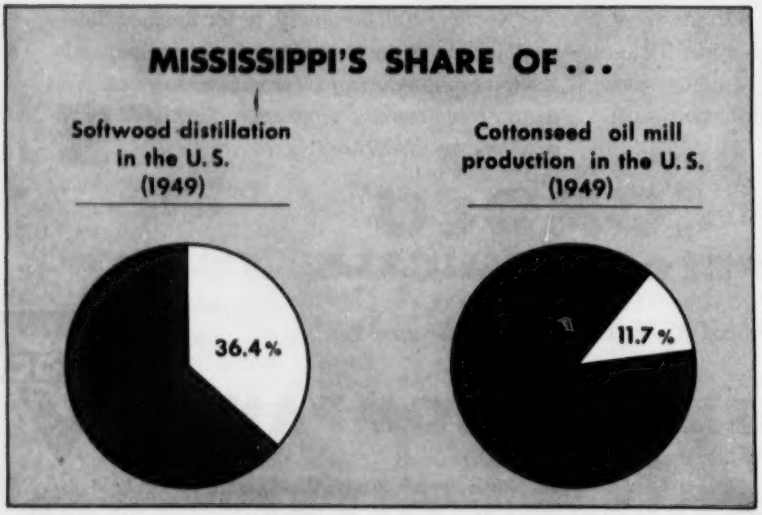


In Magnolia Land, Bloodless Dethronement

Twenty years ago, the notion that chemical industry could expand and prosper in Mississippi would have been almost laughable; but as of this week, there are more than 140 chemical process plants in the land of cotton and magnolias, and the list has been lengthening at the rate of one plant every seven weeks.

This spurt in chemical producing is a principal part of the state's over-all build-up of manufacturing capacity that has been stimulated by the "balance agriculture with industry" (BAWI) program—a plan fathered by Gov. Hugh White during his first term of office (1936-40) and pushed with zeal during the past five years.

Immediate result of this program: a bloodless dethronenment. In Mississippi, at least, no longer can it be said that "cotton is king," as Southern orators once proclaimed. Manufacturing—more than 11% of which is chemical—now accounts for considerably more of Mississippi's total income than do all field crops combined.



Still Keyed to Cotton: But while cotton has been demoted in relative importance, it definitely hasn't been exiled. Much of the state's industry is keyed to that still vital commodity; for example, nearly 40% of chemical process activity in Mississippi is based on cottonseed processing, and most of the output from the state's 30 fertilizer plants is destined for cotton fields.

It was too much dependence on King Cotton that made Mississippi particularly vulnerable to the 1929 depression. When cotton production in the state slumped from a high of $173.8 million in 1919 to a mere $40.2 million in 1932, manufacturing in the state dropped by more than 65%. Per capita income—a perennial sore subject for Mississippians—fell off to a bare one-third of the national average.

From the nadir of the depression, Mississippi has been taking long strides toward catching up. Thanks in part to heavier use of fertilizers, cotton pro-

duction now is higher than ever (up nearly 88%, 1934 to '53); and value added by manufacture has risen faster in Mississippi than in the nation as a whole—about 10-fold since '33. Per capita income now is fully 50% of the national average. Thus, Mississippi buying power is up, though the state's wage rates are still low enough to serve as one of the weightier inducements for industrial companies looking for plant sites.

Few Chemical Clients: Essence of White's BAWI plan is that a city or county can issue bonds to finance construction of a plant—on a built-to-order basis—and it can be used by an industrial company on a long-term lease. Another feature: a newly established manufacturing enterprise—whether it takes advantage of the plant construction offer or not—can be exempted from property taxes for its first five years. So far, some 86 companies have obtained new plants under the BAWI program, but only two of these—Mississippi Chemical Co. and Baxter Laboratories—have been chemical process ventures.

Mississippi Chemical is the offspring of the current popularity of anhydrous ammonia as a high-nitrogen fertilizer for direct application. In fact, much of the testing work on ammonia fertilizing was done in Mississippi. When farmers of the state learned how cheaply and effectively they could use this product, out-of-state producers could not nearly meet the demand.

WIDE WORLD

GOV. WHITE: Under his BAWI plan, chemicals pace faster industrialization.

Seeing in this situation a striking opportunity to serve its members, the Mississippi Farm Bureau began to scout out the possibility of setting up an anhydrous ammonia plant. It sent one of its top officials—Owen Cooper—all around Mississippi and finally into neighboring states to sell stock in a new corporation. With that money ($2.5 million) and an RFC loan ($3.35 million), together with a $750,000 BAWI bond issue, and about 175 employees, the Mississippi Chemical Co. went into business in 1951 with a nitric acid-ammonium nitrate-anhydrous ammonia plant at Yazoo City. MCC now has under way a $7.5-million expansion program aimed at doubling plant capacity by July 1. In some respects, this company is run like a cooperative; for example, 3.8% of 1952-53 income was distributed to stockholders as a stock dividend and another 19.5% went out to stockholder-customers as a "patronage refund" in the form of transferable certificates of indebtedness.

Baxter Laboratories began 250-employee operations in Cleveland, Miss., in 1950, producing intravenous solutions. It's leasing a plant that was financed by a $540,000, 20- year, 2½% bond issue that was approved by a 780-to-7 vote by Cleveland townspeople.

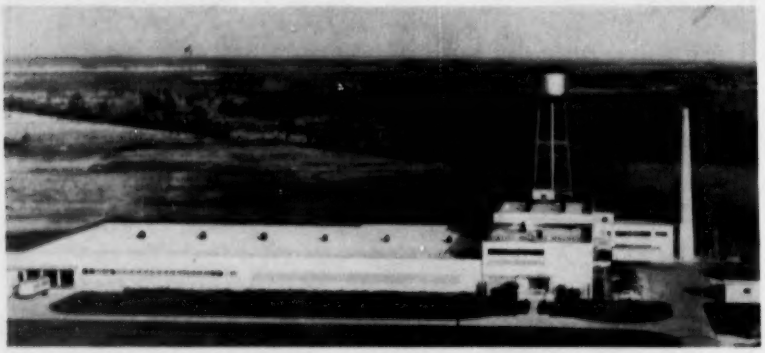
Big New Rival: Largest of the new chemical plants in Mississippi is Spencer Chemical Co.'s $14-million Vicks-

ARTHUR QUINN STUDIO

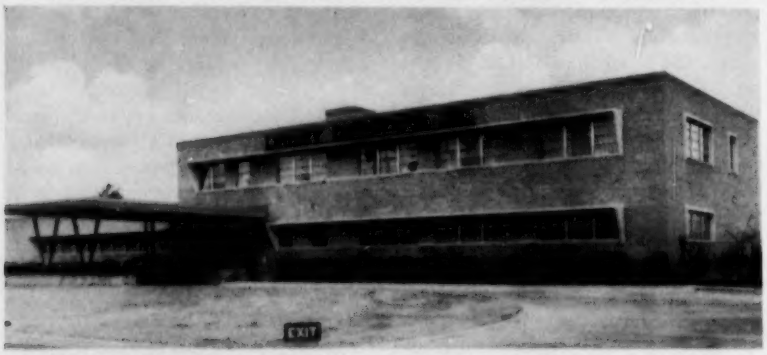
BOB HAND, JACKSON

GULFPORT'S HARBOR, SPENCER AT VICKSBURG: On Gulf Coast, a 600,000-ton port; on giant river, a $14-million plant.

MISSISSIPPI CHEMICAL AT YAZOO CITY: Owned by, operated for farmers.



STERLING DRUG AT GULFPORT: For U.S. indigestion, white tonic in blue bottles.



CROSBY CHEMICAL AT PICAYUNE: From pine stumps, a bustling business.

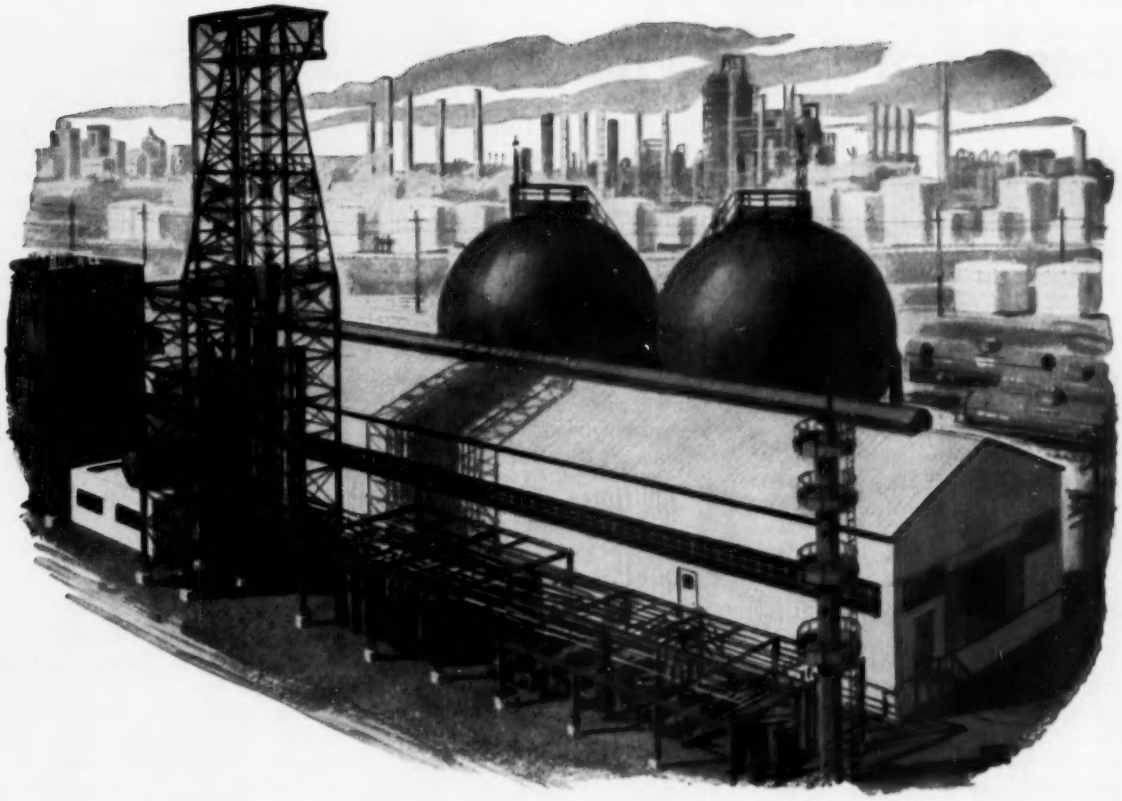
Story begins on p. 18

burg Works, where 120 people are employed in manufacture of anhydrous ammonia and ammoniating solutions used in making mixed fertilizers. This plant—one of the first ammonia plants to use the partial-oxidation-of-natural-gas method—has to compete with the farmer-owned MCC, but apparently the Mississippi fertilizer market is big enough for both.

Besides this farm market, low labor costs and the BAWI program, what does Mississippi have for chemical process firms? Several engineering groups have undertaken to provide detailed answers to that question; but some of the attractions are apparent. Among them:

- Bountiful raw materials—petroleum, natural gas, timber, limestone, bauxite, lignite, salt and water.
- Access to cheap water transportation, with deep-water ports at Gulfport, Pascagoula and Biloxi and inland barge facilities at Greenville and Vicksburg.
- Plentiful electric power—generated in steam plants using natural gas as fuel—at rates termed "competitive with or less than those in other sections of the country."

For the foreseeable future, processing of wood products (naval stores and pulp) and of vegetable oils (cottonseed and tung) will continue to be the state's major chemical activities, with fertilizers and other farm chemicals in second place. But—as indicated—Mississippi shares with Texas and Louisiana many of the attributes for supporting a chemical industry of national importance.



New Anhydrous Ammonia Plant

Atlantic puts first plant of its type in operation in growing Delaware Valley area

Atlantic has now put into production its new anhydrous ammonia plant. New in conception, it uses high-purity hydrogen from the refinery catalytic reformer. Output from this unit will be available for chemical and agricultural use . . . ranging from the manufacture of synthetic fibers to fertilizers.

This new unit is one more step in Atlantic's modernization program designed to meet the expanded needs of industry for petrochemicals. For detailed information on the constantly growing family of Atlantic petrochemicals, write to any of The Atlantic Refining Company offices listed below or use the coupon.

THE ATLANTIC REFINING COMPANY

Dept. H-12, Chemical Products Sales
260 South Broad Street, Philadelphia 1, Pa.

Please send information on Atlantic petrochemicals. We manufacture such products as

_____

Name _____

Position _____

Company _____

Address _____

ATLANTIC PETROLEUM CHEMICALS

Philadelphia,
Providence, Charlotte, Chicago

In the West:
L. H. Butcher Co.

In Canada:
Naugatuck Chemicals Division of
Dominion Rubber Company, Ltd.

In Europe:
Atlantic Chemicals SAB,
Antwerp, Belgium

Lesser of Two Evils?

Chemical companies are still divided on the controversial issue of mandatory retirement, though most now admit that it solves many problems.

Big job is to sell the system to management itself—especially in small companies where there often hasn't been sufficient preconditioning.

No subject (barring tariffs) is apt to stir up so much heated argument in the chemical industries today as mandatory retirement. Nearly everyone regards himself as an authority on the matter; everyone, at least, has a definite opinion backed up by a quota of "infallible" arguments to prove his point.

Consensus is however, that the merits of a mandatory retirement limit

> **"Advantages outweigh disadvantages. It's the term that's unfortunate."**

are manifold. Just how inflexible the system should be is the point at which agreement breaks down. Some companies feel there should be no exceptions made to any policy of retirement at a given age; some maintain that so long as there's no way to measure a man's talents in terms of his age, there must be loopholes for special cases; others would set up one system for executives, another for hourly workers.

Nonetheless, there's a noticeable trend away from the extremes and toward a mean position. One company (typical of many) espouses this philosophy: "In theory we would prefer a strict mandatory retirement program. It enables employees to make definite plans for retirement; provides greater incentives for younger employees; forces management to plan ahead; avoids union charges of discrimination with respect to hourly employees; automatically separates employees without leaving a bad taste in their mouths."

> **"Biggest problem is a psychological one . . . putting people out to pasture before they're ready to go."**

But, the reasoning goes on, "when mandatory retirement is put into effect people—and personalities—are involved." Consequently, the period of indoctrination must be long, the age limit must be high (it's creeping up to 70 across the nation), and exceptions must be made at first in the case of highly trained technical and executive personnel."

Occasionally, some companies find that retaining such talent on a consulting basis (which doesn't affect retirement benefits) solves a thorny problem; others are trying (and finding beneficial) a preretirement system whereby for a few years before the deadline, employees are put on a part-time work basis.

"We've struggled through all the unhappy difficulties that can crop up when mandatory retirement is first installed," admits one large Eastern manufacturer, "but the cold facts remain that from a purely business basis it's well worth the effort." Retention of a few employees beyond their usefulness for emotional reasons can hurt a company; difficult community relations (especially in small towns) are bound to result when one man is retained, another retired at the same age. Then too there's the possibility of increased insurance costs due to accidents brought about by use of "superannuated" employees in production jobs; the union is sure to make an issue of any case that accords management one criterion for retirement and hourly workers another.

> **"With mandatory retirement, personnel gaps are easier to fill."**

"Anyone can cite cases in his own company," agrees a West Coast firm, "in which mandatory retirement even at 70 results in the loss of many capable and seasoned executives. But the few exceptions don't justify scuttling the system."

> **"Without some compulsory age limit, pension programs are virtually impossible to administer."**

"When the ideas behind mandatory retirement are properly explained," says one New England firm, "many of the psychological problems are dispelled." There's an unfortunate connotation associated with the word mandatory; "there's every possibility that as the U.S. age span increases we'll push our fixed retirement age up accordingly."

"Explained from a standpoint of making pension plans possible, mandatory retirement isn't hard to put across," continues another company president. "But with the general trend upward, it's hard to 'sell' a ceiling under 70."

In general, smaller chemical companies are the most rugged proponents of flexible retirement. "Chief advantage," points out one Midwest pharmaceutical maker, "is that it encourages some employees who have built up annuities during low-wage-scale years to stay with the company. Larger companies can adopt minimum guarantees on all pensions; we can't."

> **"There's no connection between mandatory retirement and the technical manpower shortage."**

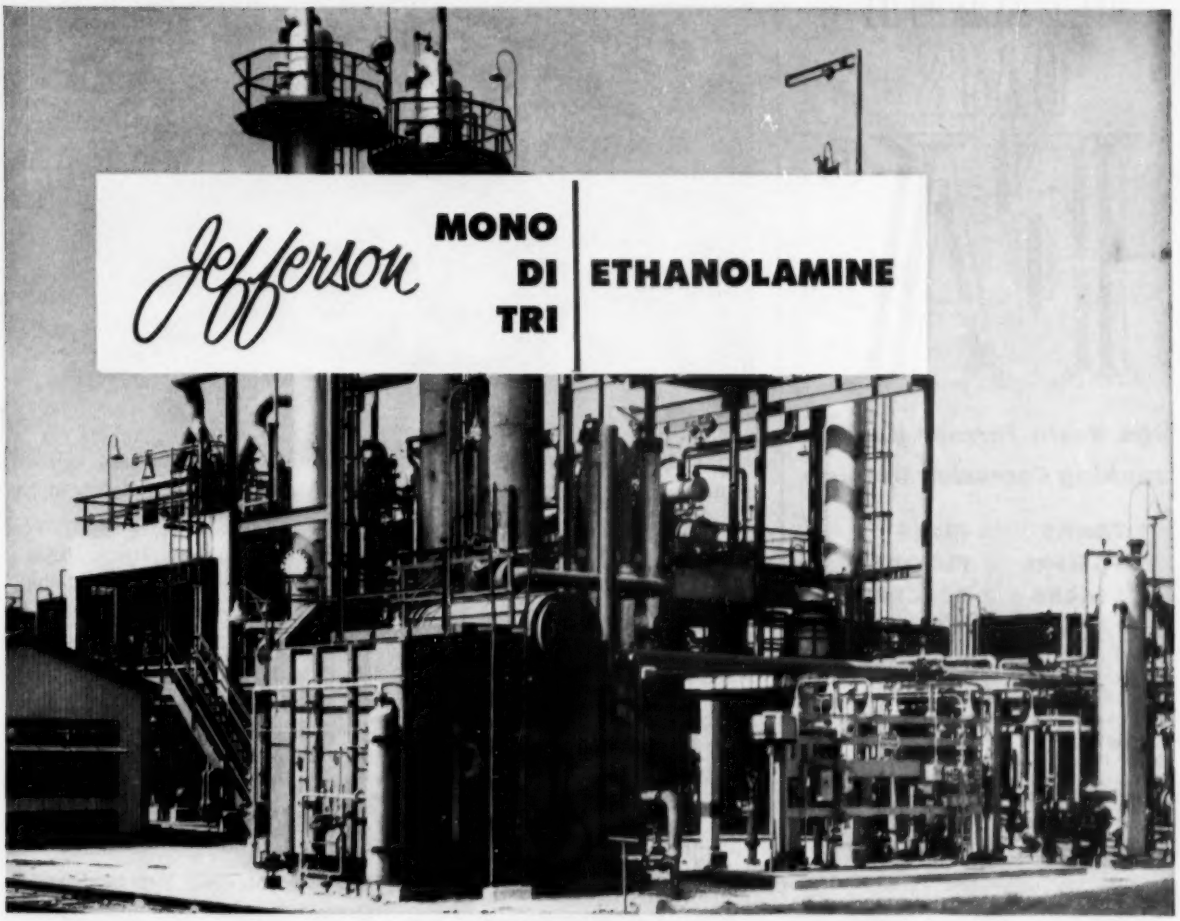
"The problem's vastly different when you're small," agrees another. "We run periodic reviews on all employees over 65, but forced retirement is left up to foremen, supervisors and the board of directors. In that way we avoid loss of competent personnel just because an arbitrary age level has been reached; every case is judged on its own merit. The system works well as long as you're sure that everyone has an even deal, and everybody knows everybody else."

> **"The compulsory retirement limit has been edging up to 70 in recent years, seems liable to settle there . . ."**

"Actually mandatory retirement might be fairer to the company in the long run," states a third. "But as yet we have no contributory retirement benefits plan. And a noncontributory plan reduces management retirement wages so low that it would be cruelty to enforce it arbitrarily at age 65."

With such conflicting views, the arguments are sure to run long past 1955. But one fact's clear: more and more chemical companies are tending toward a middle-of-the road approach to mandatory retirement.

When your product depends on quality, rely on . . .



Jefferson Ethanolamines are made by and for chemical specialists to help improve your products and processes. They offer the performance-minded chemical manufacturer superior results in a wide variety of industrial applications that include:

- Gas treating—H_2S and CO_2 removal
- Corrosion inhibition
- Textile intermediates and softeners
- Detergents
- Cosmetic and toilet goods
- Emulsifying soaps in waxes, polishes and coatings
- Pharmaceuticals
- Rubber

and many other quality-demanding uses

Available in tank cars, tank wagons, 55-gallon drums, or in samples for your investigation. Our technical service staff will gladly assist you in your Ethanolamine applications.

Meanwhile . . . **Send for your copy of our NEW 40-page Technical Bulletin on Ethanolamines. It contains the latest information in convenient sections including:**

Shipping Information
Sales Specifications
Analytical Procedure
Physical Properties
Chemical Properties
Industrial Uses
Handling & Storage
Toxicity, and a complete Bibliography

Specialists in *essential chemicals from hydrocarbon sources*

Jefferson
CHEMICAL COMPANY, INC.
260 MADISON AVENUE, NEW YORK 16, N. Y.

Branch Sales Offices: Chicago, Houston, Charlotte
West Coast Sales Agent: Nelson A. Howard, Jr., Los Angeles
Plant: Port Neches, Texas
Other Stock Points: Chicago, Houston, Charlotte, and Tenafly, New Jersey

Ethylene Oxide,
Glycols, Dichloride
Ethanolamines
Nonyl Phenol
Morpholine
Ethylene Carbonate
Propylene Carbonate
Polyethylene Glycols
Glycol Ethers

QUAKER OATS' FA®

the Resin Former Used in making Corrosion Defying

TANKS PIPES
TOWERS FLOORS
STACKS REACTORS
DIGESTORS

Furfuryl alcohol qualifies as *the chemist's chemical.* It makes his equipment resistant to chemistry's most corrosive substances. FA* resin mortars, used to join vitrified tile and brick in the construction of reactor linings, withstand acids (except strongly oxidizing acids) and are completely unaffected by alkalies—even hot solutions of concentrated NaOH.

The usefulness of QO® furfuryl alcohol is not limited to corrosion resistant cements. This simple heterocyclic compound consisting of a furan nucleus and a hydroxymethyl group serves as a resin ingredient, a solvent for resins and dyes, a wetting agent and a reactive solvent. Its use as an additive in making gap-filling adhesives from urea-formaldehyde resins, as a modifier in the manufacture of asphaltic battery cases, and as a binder in the manufacture of underground pipe-wrap suggests the broad future of this alcohol. The full area of furfuryl alcohol's usefulness has not been explored.

Post yourself on FA. Write for Bulletin 205, describing its chemistry and use. Ask for experimental quantities and other technical co-operation as needed.

*Reg. U. S. Pat. Off.

The Quaker Oats Company
CHEMICALS DEPARTMENT

3340 The Merchandise Mart, Chicago 54, Illinois
Room 534Q, 120 Wall St., New York 5, N.Y.
Room 434Q, P. O. Box 4376, Portland 8, Oregon

In Europe: Quaker Oats-Graanproducten N.V., Rotterdam, The Netherlands; Quaker Oats (France) S. A., 3, Rue Pillet-Will, Paris IX, France
In Australia: Swift & Company, Pty., Ltd., Sydney
In Japan: F. Kanematsu & Co., Ltd., Tokyo

FERRARA NITROGEN WORKS: Montecatini's output should rise materially in '55.

FOREIGN. . . . . .

Sulfur Aid/Italy: The Council of Ministers in Rome has approved a bill aimed at easing the pressure on Italian sulfur manufacturers caught with heavy sulfur surpluses, insufficient funds to finance modernization programs. An appropriation of $20 million has been made available to sulfur producers to bring equipment up to date; officials are considering special inter-State agreements under which Italian sulfur would be sold abroad at special reduced rates.

Nitrogen fertilizer producing companies, on the other hand, are reporting good sales forecasts for 1955. Led by giant Montecatini (with its host of nitrogen-fixation plants), manufacturers expect total sales (both foreign and domestic) to increase 5-10% this year.

•

Dyes/Chile: After almost 20 years of producing various types of aniline dyes, the Sociedad Industrial de Colorantes, S.A., recently started turning out sulfur blue at a new plant in Santiago. Aniline production is also due for an increase in capacity soon, should give Sociedad Industrial a chance to push export sales next year—primarily in Argentina where all types of dyes are in heavy demand.

•

Pharmaceuticals/Philippines: Chas. Pfizer & Co. (Brooklyn) will start operations at a new pharmaceutical plant in the Philippine Islands early this spring. Company officials have contracted for reconstruction and alteration of a two-story plant in Makati, near Manila; equipment is being shipped from the U.S.

•

Sulfuric Acid/Great Britain: Imperial Chemical Industries Ltd.'s new sulfuric acid units at Billingham-on-Tees (County Durham) is now in production. Built at a cost of $5.8 million, the new facilities will increase the plant's total output by 73,000 tons—to 180,000 tons/year.

•

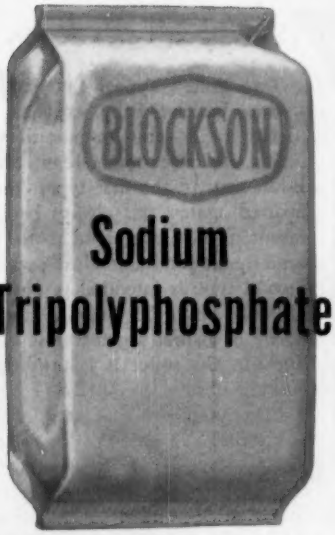
Expansion/Mexico: Petroleos Mexicanos will invest 500 million pesos (about $40 million) in modernizing Permex installations in Tampico (a Gulf Coast port) and improving operations in refineries at Madero, Arbol Grande and Mata Redonda. Also slated to come on stream soon: a $15-million lubricants plant at Salamanca designed to turn out 2500 bbls./day.

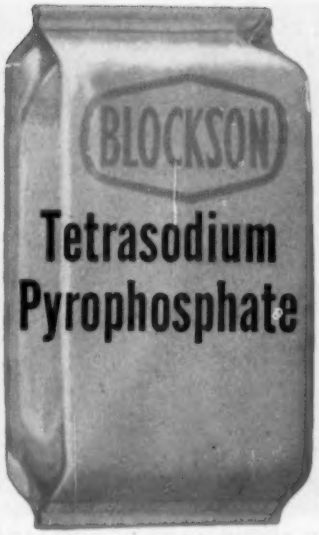
•

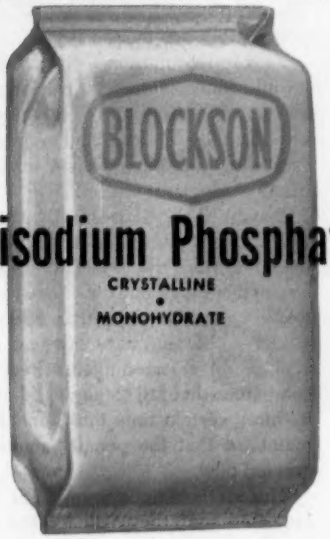
Synthetic Rubber/France: The Society of Butyl Rubber (a company formed recently by a consortium of French oil, tire and chemical producers) will build a 20,000-ton/year butyl rubber plant in the Le Havre area. Expected in production sometime in 1957, the plant will save France over $5 million/year by lowering import requirements of synthetic rubber.

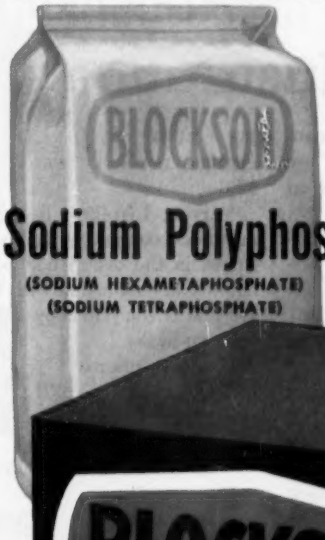
•

Trade/India, Russia: India and the U.S.S.R. have extended for one year the schedules attached to the trade agreement signed between them in Dec. '53. Included in the list of goods the U.S.S.R. provides to India: chemicals, dyestuffs, pharmaceuticals.

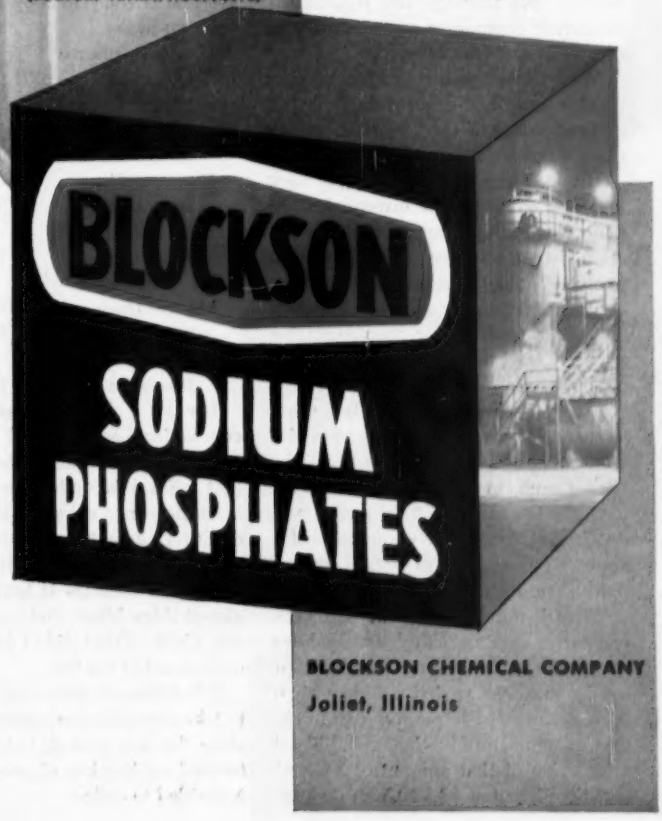








Sodium Polyphos is Blockson's brand name for a water soluble Glassy Sodium Phosphate with the desirable characteristics of Sodium Hexametaphosphate and Sodium Tetraphosphate.



ALSO MAJOR PRODUCERS OF:

SODIUM ACID PYROPHOSPHATE

CHLORINATED TRISODIUM PHOSPHATE

DISODIUM PHOSPHATE
ANHYDROUS • CRYSTALLINE

MONOSODIUM PHOSPHATE
ANHYDROUS • MONOHYDRATE

SODIUM FLUORIDE

SODIUM SILICOFLUORIDE

HYGRADE FERTILIZER

BLOCKSON CHEMICAL COMPANY
Joliet, Illinois

ETHYL'S TEL PLANT AT BATON ROUGE: In '53 fire, what policies applied?

Inquest on Insurance

Just how much protection does a manufacturing company get out of "use and occupancy" insurance policies on its factories?

This very basic question—of prime concern to all U.S. chemical producers—is posed by the Ethyl Corp. in a $2.4-million civil damage suit against six insurance companies, all members of the Factory Insurance Assn.

What Ethyl wants to know: What good is a use-and-occupancy policy on a producing facility if that policy doesn't cover loss of production?

Hit by Fire: The story begins back in 1951, when the six insurance companies—working through their association—issued to Ethyl a standard-form five-year policy labeled "Use and Occupancy Insurance—Gross Earnings Contribution Form for Manufacturing Risks." This was to cover Ethyl's main plant at Baton Rouge, La.

That plant was hit by fire two years later; and—according to the complaint filed by Ethyl's attorneys in U.S. District Court in New York—damages from the fire caused a total loss of production of antiknock compounds for about three days, and partial loss of production for more than four months.

"Had it not been for the fire," the company asserts, "Ethyl would have produced at its Baton Rouge plant during the loss period not less than 5,578,429 lbs. of tetraethyl lead in excess of actual production. . . ." Total sales value of that amount of TEL at that time is put at $3,540,583; deducting cost of raw material and other charges, net value would have been $2,389,174.

Varying Liability: Because the six insurance companies had various-size shares in the occupancy policy, their liability in connection with the alleged fire loss is computed by Ethyl on this pro rata basis:

Home Insurance Co.	$1,264,467.45
National Fire Insurance Co. of Hartford	353,976.01
Hanover Fire Insurance Co.	338,054.62
American Insurance Co.	169,056.26
St. Paul Fire & Marine Insurance Co.	158,248.99
Great American Insurance Co.	105,370.67

However, Ethyl complains, those companies have refused to pay any part of those claims. The reason for that refusal is understood to be the insurance men's belief that—because of Ethyl's inventory policies, its newer manufacturing plant at Houston, and its storage facilities at both plants and also at Edge Moor, Del., and Wilmington, Calif.—Ethyl didn't lose any sales on account of the fire.

Ethyl doesn't deny that it was able to take care of its customers during and since the loss period, but feels it was insured against loss of production and is entitled to collect.

Two Policy Types: Occupancy insurance policies, Ethyl explains, come in two forms—one for manufacturing plants, the other for mercantile establishments. In the first type, "the loss insured against has always been represented and understood to be measured by the production lost"; while the second type is intended to cover loss of sales. In other words, "the producer is insured against loss of production; the seller is insured against loss of sales."

Ethyl declares that the insurance companies, "in denying their liability for loss suffered by Ethyl, now urge for the first time that a manufacturing risk must be treated like a mercantile risk, and that the test of recovery is not loss of production, as stated in the policies, but loss of sales."

This interpretation, Ethyl contends, "would render valueless and meaningless not only the policies sued on . . . but virtually all use and occupancy insurance policies issued to manufacturers throughout the U.S."

Penalty Also Claimed: In addition to the net value of the TEL not produced during the loss period, Ethyl also wants judgment for a penalty that would amount to more than $286,000. Under Louisiana state law, an extra 12% can be assessed against insurance companies that fail to pay valid claims within a certain time limit; and Ethyl maintains that the penalty should be exacted now.

The six insurance companies have indicated that they will let the Factory Insurance Assn. and its attorneys defend this suit for them. FIA has declined to issue a statement before it files a formal answer to Ethyl's complaint; but insurance men in New York are predicting that FIA's position will be about like this: property damage from the 1953 fire was covered by other policies, and Ethyl can't show that it lost any sales revenue on account of the interruption in production at its Baton Rouge plant; therefore, since there has been no actual monetary loss, the policyholder is not entitled to collect.

Outcome of this suit—and if it goes to trial, the decision may be several years off—will be of fundamental importance to all chemical producers; but particularly to those who divide their production among two or more plants, and those who maintain fairly substantial inventories.

for—

..good color stability

..improved oil solubility

...try—

CARBIDE'S

MONO-, DI-, TRI-,

AND MIXED

ISOPROPANOLAMINES

...as—

...intermediates for

* DETERGENT BUILDERS
* LATEX EMULSIFIERS
* POLISH EMULSIFIERS

...stabilizers for textile resins

...solubilizers for casein

Try these isopropanolamines, too, in making preferred soaps for emulsifying "soluble" mineral oils. For additional information on these isopropanolamines and how they can make money for you write for technical data or consult a CARBIDE Technical Representative. Offices are located in 23 principal cities. In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

In Addition—

to these four isopropanolamines, you can get more than 80 other nitrogen compounds from CARBIDE. Among these products are mono-, di-, and tri- ethanolamines; dimethyl and diethyl ethanolamines and six morpholines. Write for technical data on these profit-making products.

CARBIDE AND CARBON CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.

CHEMICALS FOR THE RUBBER INDUSTRY

Stauffer CHEMICALS
SINCE 1885

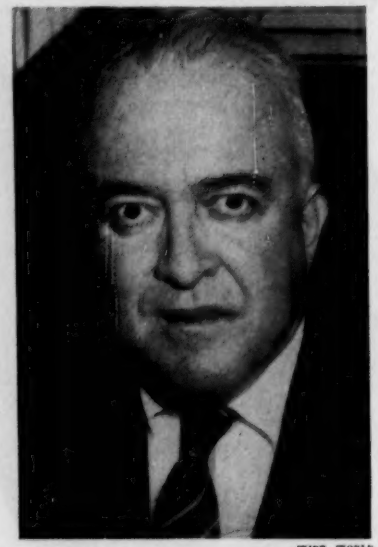
Relying to a large extent on the products of chemistry, the rubber industry is constantly aware of the necessity for a dependable supplier. With a line of chemicals for the rubbermakers — sulphurs, sulphuric acid, sulphur chlorides, carbon disulphide, chlorine — Stauffer offers the industry one channel through which these materials can be provided. From Stauffer's plants and warehouses, conveniently situated throughout the country, prompt deliveries can be made.

A Stauffer product is assurance of a better product!

Stauffer... guaranteed by its name!

STAUFFER CHEMICAL CO.

380 Madison Avenue, New York 17, N. Y.
221 No. LaSalle Street, Chicago 1, Illinois
824 Wilshire Blvd., Los Angeles 14, Calif.
326 South Main Street, Akron 8, Ohio
636 California Street, San Francisco 8, Calif.
P.O. Box 7222, Houston 8, Tex. • Apopka, Fla.
North Portland, Oregon • Weslaco, Texas



WIDE WORLD

LAWYER FINNEGAN: For mediation post, he's Eisenhower's choice.

LABOR . . . . . .

Splinter Move Fails: The AFL Chemical Workers is not the only industrial union having trouble with dissidents this month. Some insurgents in Goodyear plants have been trying to set up an independent union to represent some 3000 employees now in bargaining units of the CIO Rubber Workers; but their effort seems to have crumpled. The National Labor Relations Board has dismissed the group's petition for an election, citing a policy that would appear to be applicable to chemical plants where such a schism exists. An NLRB spokesman said the board's policy has been "to refuse to carve out a multicraft group" in a plant where a contract was already in force.

•

Incomer's Bow, Outgoer's Advice: In the news this week are the incoming director of one labor agency and an outgoing member of another:

New York lawyer Joseph Finnegan made his bow to the public after being named by President Eisenhower to be director of the Federal Mediation & Conciliation Service. A Republican, Finnegan is to succeed Whitley McCoy, who resigned Dec. 1.

Out in Niles, Calif., Albert Beeson—who served on the National Labor Relations Board up to Dec. 16—has been advising businessmen not to bring their labor disputes to the NLRB, but rather to try to "settle them in your own back yard." He also criticized his former NLRB colleagues as "well meaning and honest, but without practical experience"; and he rapped NLRB procedural policies that, he said, make for long delays.

•

Truckers Crimp Construction: A strike by nine truck drivers—members of the AFL Teamsters—has put a crimp in construction work at four Du Pont projects in the vicinity of Wilmington, Del. The truck drivers—who greeted the new year with a demand for a 30¢/hour wage increase this year and another 10¢ rise in '56—set up picket lines that were honored by about 550 construction workers at Du Pont's experimental station, Chestnut Run plant, Krebs pigments plant, and Eleutherian Mills-Hagley Foundation.

•

Unity, but Later: Merger of the AFL and the CIO is still in the cards, but it won't come about during 1955. That's the latest word from AFL President George Meany and CIO President Walter Reuther, who have arranged for their joint unity committee to meet Feb. 9 in Miami Beach and consider a subcommittee's recommendations on some of the "more important" details involved in the proposed merger. This will follow a week-long meeting by the AFL's executive council in nearby Miami. Meany's rumored reason for seeing Reuther last week: to clear up reports that Reuther might be turning "difficult" about the merger.

LEGAL . . . . . .

Still in Doubt: As was foreseen when the Justice Dept. and Eastman Kodak signed their recent antitrust settlement (*CW, Jan. 1, p. 13*), the Federal Trade Commission has approved Eastman's "fair-trade" contracts with retailers —even though Eastman's own retail stores are in direct competition. This leaves a shadow of doubt over that very point, because the two government agencies enforcing the Sherman and Clayton Acts have divergent views. In writing up the FTC's unanimous ruling last week, Chairman Edward Howrey declared that Congress had not meant to discriminate against manufacturers who sell part of their output through their own retail stores. A contrary opinion was expressed by the Justice Dept.'s Antitrust Division, which said that one of its

AA Quality

Sodium Fluoride

97% (Dense Powder or Granular)

Sodium Fluosilicate

98% (Dense Powder)

Rx for Healthier Teeth fluoridated drinking water. Widely used for Public Water Fluoridation, AA QUALITY Sodium Fluoride and Sodium Fluosilicate combine *uniformity* with *quality*—the result of exacting chemical control and over 85 years' manufacturing experience. Available in bags or drums, each product supplies the fluorine recommended for sound teeth. *Service* you can depend on, because of large-scale production. Assured quality, security of supply, prompt service—good reasons for using AA QUALITY Chemicals. Mail coupon for full information.

AA QUALITY Products

FLUORIDES AND FLUOSILICATES

Sodium Fluoride • Ammonium Fluosilicate
Magnesium Fluosilicate • Potassium Fluosilicate
Sodium Fluosilicate • Zinc Fluosilicate
Fluosilicate Mixture • Ammonium Fluoborate
Aluminum Fluoride • Magnesium Fluoride

GELATIN

KEYSTONE® Gelatin: Edible, Photographic
Pharmaceutical, Technical

OTHER PRODUCTS

Animal Bone Charcoal
Bone Black Pigment (COSMIC® Blacks)
Keystone Ammonium Carbonate
Sulphuric Acid • Insecticides-Fungicides

AA QUALITY Phosphorous Products

PHOSPHATES

Disodium Phosphate • Trisodium Phosphate
Dicalcium Phosphate, PHOS-FEED® Brand

PHOSPHORUS AND PHOSPHOROUS COMPOUNDS

Elemental Phosphorus (Yellow-White)
Phosphorus Red (Amorphous)
Phosphorous Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

PHOSPHORIC ACID

85% N. F. Grade • 75% Pure Food Grade
50% Pure Food Grade

PHOSPHATE ROCK AND FERTILIZERS

All grades Florida Pebble Phosphate Rock
Superphosphate • Complete Fertilizers

Florida pebble phosphate rock as it comes from our mines—source of Elemental Phosphorus and other AA QUALITY products.

AA Quality Chemicals

The AMERICAN AGRICULTURAL CHEMICAL Co.
General Office: 50 Church Street, New York 7, N. Y.
33 plants and offices serving U.S., Canada, Cuba

The American Agricultural Chemical Co.,
Chemical Division, 50 Church St., New York 7.

☐ Please send Data Sheet with full information
☐ Please send samples of following products:

Name & Position_____
Firm_____
Address_____

reasons for attacking Eastman's color film marketing practices was that Eastman retails through its own outlets the same goods sold to independent retailers.

FTC's dismissal of its 1952 complaint against Eastman means that the company will be free to continue its more than 6000 fair-trade agreements with retailers for all of Eastman's 163 products except color film. FTC took the position that last month's consent settlement had already taken color film out of the FTC case.

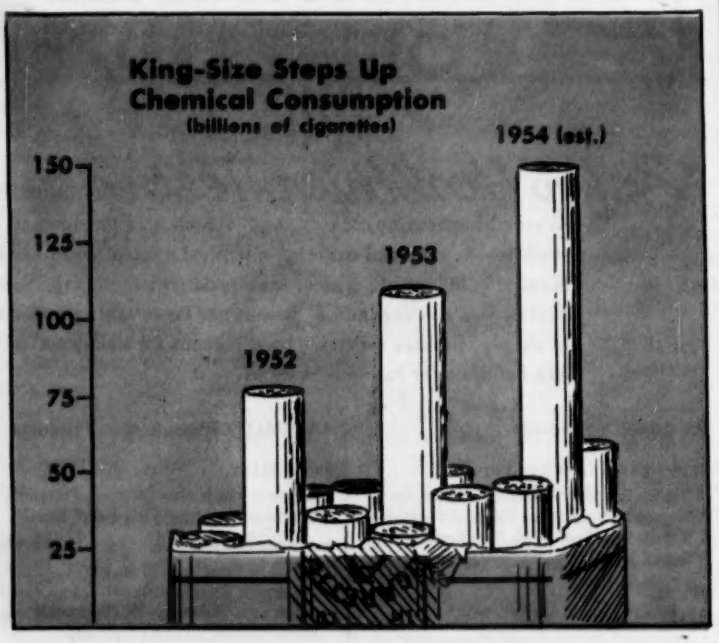
•

Liniment and Fertilizer: Hearings on two other actions by government agencies against chemical process firms are scheduled for next month:

• On Feb. 15 in U.S. District Court at St. Paul, Judge Gunnar Nordbye will begin what may be a two-month trial of the case against the J. R. Watkins Co. (Winona, Minn.). The company and 12 of its officials are accused of having filed false statements in connection with use of tax-free alcohol in a Watkins liniment.

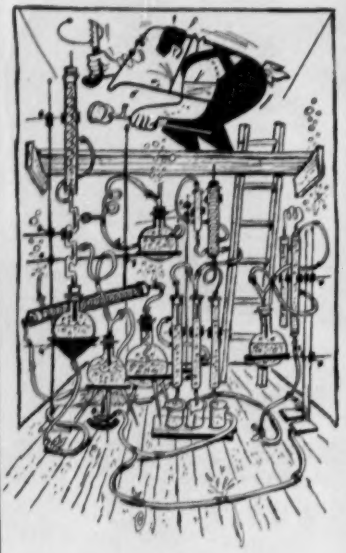
• The following day in New York, Hearing Examiner Loren Laughlin will hear evidence in the Federal Trade Commission's action against the Foreign Products Corp. (New York) and the Burkleigh Co. (Towson, Md.). Those firms have been marketing a product called "Actumus," which is imported from the United Kingdom and which is advertised as a fertilizer 1000 times more effective than manure. FTC alleges that the companies' advertising claims are "false, unfair and deceptive."

IMPACT



A Fillip to Chemical Profits

THOUGH cigarette sales dipped in '54 (some 4%), the trend from regular to king size (now 28% of total sales) eased the cutback in chemicals consumed. The 15 mm. that kings boast over regulars roughly accounted for an extra 13,800 tons of glycols, 760 tons cellophane, 1330 tons of paper wrappers, 1890 tons of paper-backed aluminum foil, and 23,000 tons of cigarette paper. Best bet: kings will capture a still larger share of the market this year.



Looking for a

Rare organic

in larger-than-laboratory amounts?

● It's easier to ask Eastman to make it for you!

Extensive facilities and wide experience in the preparation of some 3500 Eastman Organic Chemicals for research and analytical work can serve you with compounds hard to find on the market in quantity. We shall be glad to discuss your requirements with you.

Write or wire *Distillation Products Industries,* Eastman Organic Chemicals Department, Rochester 3, N. Y.

DPi

DISTILLATION PRODUCTS INDUSTRIES
is a division of
EASTMAN KODAK COMPANY

NEW

For the first time in extremely high purity

in carload quantities

INTERNATIONAL

magnesium oxide

99.5+%
MgO

Magnesium Oxide of high purity, 99.5+% MgO (ignited basis), is now being produced in several grades and in large tonnages by *International*. Prompt shipments of carload lots can be made from the new chemical plant at the Carlsbad, New Mexico, potash mine and refinery.

New facilities have been completed to produce *Magnesium Oxide* synthetically by direct decomposition of magnesium chloride under controlled reaction. For the first time, because of this new process, it is now possible to offer industry this basic chemical in large tonnages in the purest form ever made in commercial quantities. The stable source of magnesium chloride, as a raw material, will permit continuing large volume production of uniformly high quality *Magnesium Oxide* that is essentially free of calcium, silica, iron and alkaline impurities.

The availability of large tonnages of high purity *Magnesium Oxide* at relatively low cost opens the door to new uses in many industries where purity is essential. We are prepared, through our Product Development Department, to explore with any industry the application of *Magnesium Oxide* to specific production problems. For experimental purposes in any industrial plant, we will furnish samples of *International Magnesium Oxide*.

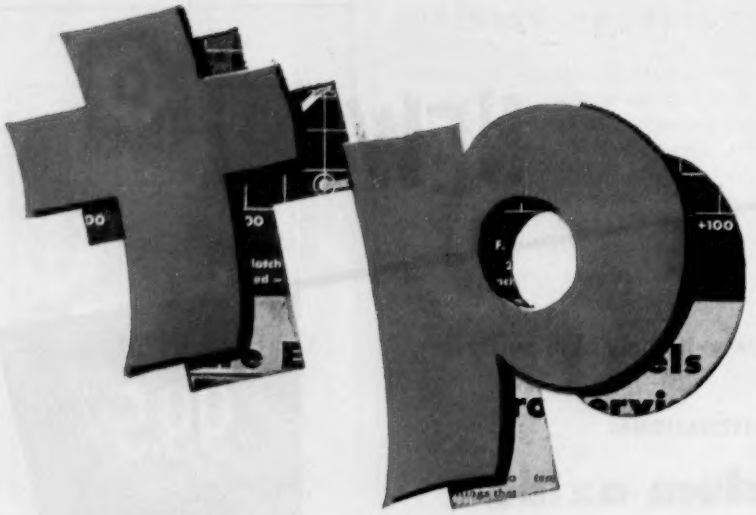
International MINERALS CHEMICALS

inquiries

to potash division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6 • Sales Offices: 20 North Wacker Drive, Chicago 6 • 61 Broadway, New York 6 • Midland, Texas



VOLUME BAG USERS REMEMBER THESE INITIALS

Thomas Phillips—a name well respected in the paper industry since 1882—has recently expanded its bag division and is now able to offer this extra quality product in far greater amounts. Look over the T-P line. Compare service—compare product, and you, like other T-P customers, will find your bag packaging problems eliminated.

TOP QUALITY KRAFT PAPER

For years, several leading bag manufacturers have been using Thomas Phillips' rope composition papers in their product, because certain of their customers, acquainted with T-P quality papers, specified their use by name.

COMPLETE LINE ALL TYPES—ALL SIZES

All Standard types—single wall, duplex and multiwall—in perhaps the most complete line of sizes in the industry, 2 lb. to 100 lb.

MOISTURE RESISTANT POLYETHYLENE

A full line of specials for moisture retention or resistance, including polyethylene coated kraft.

SKID PROOF INKS AND PAPER

Thomas Phillips has developed a texture finish paper that reduces bag slipping to an absolute minimum. Special inks, too, were developed to make bag handling safer, easier.

MIXED CAR SHIPMENTS

Thomas Phillips' full line of sizes and types enables you to get all your requirements from a single source in economical mixed car shipments.

For Your Files:

If you purchase bags you'll want a copy of Bulletin TP-54 for your personal file. It gives a full account of Thomas Phillips' many services, and catalogs this most complete line of finer paper products. Send for yours today!

For 85 years a leading supplier of bags to Agriculture and Industry

THE THOMAS PHILLIPS CO., Akron, Ohio

Thomas Phillips COMPANY

Name.....

Position.....

Company.....

City..... Zone..... State.....

Still Striving

Thanks to a drive on export markets, Great Britain's chemical industry today is running ahead of last year's record sales rates. Exports of chemicals in the first 10 months of 1954 were up 16% over 1953 values, overall industry production was some two-thirds higher than it was in 1948—twice the average increase for other manufacturing industries.

Among those products that scored spectacular gains during 1953 was dyestuffs; output jumped 15%. Chief reason: a growing demand from Commonwealth countries such as Australia, India, Pakistan and New Zealand.

The memory of the sulfur shortage a few years ago is still fresh in the minds of British manufacturers, however. Considerable gains have been registered recently to increase supplies, but the chemical industry still isn't satisfied. The general feeling: though production of sulfuric acid from indigenous materials is considerably more expensive than relying on imports, it's a form of insurance British producers must learn to take in stride.

KEY CHANGES. . .

Max Key, to manager, plastics production, Dow Chemical Co., Midland.

Michel E. Puyans, to vice-president, finance, and **William O. Ashe,** to treasurer, Great Lakes Carbon Corp., New York City.

Kenneth B. Mattewson, to assistant to the vice-president, Canadian Resins and Chemicals, Ltd., Montreal.

E. H. Bluman, to vice-president, Harchem Division, and **H. W. Crogan,** to vice-president, Maltbie Laboratories Division, Wallace & Tiernan, Inc., Belleville, N. J.

Paul C. Jameson, to secretary and treasurer, National Distillers Products Corp., New York City.

William I. Burt, to president, Goodrich-Gulf Chemicals, Inc., Akron.

William L. Abramowitz, to vice-president, Chemical Division, The Borden Co., New York City.

S. A. Pond, to industrial relations manager, Chemical Divisions, Food Machinery & Chemical Corp., New York City.

WHY Du Pont WILL BUILD IN OUTSTATE MICHIGAN

Plans for construction of a neoprene (chemical rubber) plant in the new Lake Michigan chemical center at Montague, Michigan, have been announced by E. I. du Pont de Nemours & Co., world's largest chemical concern.

The new Du Pont plant will be close to the Hooker Electrochemical Company plant that began production recently.

Hooker will supply anhydrous hydrogen chloride to Du Pont for its neoprene process. Union Carbide and Carbon will build a new plant in the same area to manufacture acetylene for Du Pont and future customers.

Why did Du Pont choose this Outstate Michigan location?

"The plant area is over a huge deposit of salt from which the chlorine will be made (by Hooker)," said a Du Pont announcement.

"The existence of the deposits, the availability of labor, the ample supply of power and good water and proximity to markets are all major factors which led to selection of the Montague site."

Outstate Michigan has plenty of good sites for chemical plants as well as any other plants. Many, like the Du Pont site, offer the benefits of Great Lakes transportation.

For better profits investigate the industrial advantages of this water wonderland in the heart of America.

It takes a specific location with proper facilities TO FIT YOUR NEEDS Write us YOUR REQUIREMENTS

***Outstate Michigan* FITS INDUSTRY LIKE A GLOVE**

HERE'S THE PLACE TO GO PLACES!

FOR INFORMATION CONTACT INDUSTRIAL DEVELOPMENT DEPT. **CONSUMERS POWER COMPANY**
JACKSON, MICHIGAN

THE DELBAY PROCESS has renewed papermakers' interest in nitric acid pulping. And though this new process has yet to prove all its claims, it does offer some attractive advantages inherent in the use of nitric acid:

- The operation requires only simple equipment. Pulping can be carried out in open tanks, needs no heat input nor pressure vessels.
- Nitric acid attacks lignin selectively, has little effect on cellulose. Fiber strength is preserved, alpha cellulose content can be high.

In addition, Delbay claims . . .

- Even brushwood can be used since the process does not require debarking of the raw material.
- Consumption of chemicals is low. One ton of bleached pulp uses only 300 lbs. of nitric acid, 30 lbs. of caustic soda, 30 lbs. of chlorine.
- Papers made by the Delbay process from any cellulosic material —even deciduous woods, straw, bagasse, etc.—can compete with sulfite paper from 100% fir or spruce, cost 20% less to make.

but skeptics say . . .

- Present debarking methods are inexpensive, good insurance for clean, high-quality pulp.
- Opinions differ on whether nitric acid can be reused without loss of yield, darkening of the pulp.
- The process has not yet been proved in a commercial pulping plant.

New Look for Nitric Pulping

Though the French get wider publicity for creating fashions than for designing chemical processes, one of their latest offerings (CW Newsletter, Jan. 1) is a "new look" for an old process: nitric acid pulping of cellulose. Dubbed Delbay by inventors Delcroix and Desorbay, the process, it is claimed, can pulp any cellulosic material continuously, cuts investment and production costs right across the board.

For many years, papermakers have been intrigued by the inherent advantages of pulping with nitric acid. Its highly selective reaction with the lignin constituent of wood attacks cellulose very little, preserves most of the natural strength of the fibers. Too, the operation can be carried out at room temperature in open tanks, thereby eliminating the heat input and pressurized digestors required by other chemical pulping methods.

Experiments conducted in this country shortly before the war showed that nitric process poplar pulp was freer (easier to drain), more resistant to long beating than soda poplar pulps. Paper made from the nitric pulp had greater tear, bursting and folding strength, was more shrink-resistant. It was also found that nitric pulp could be produced with 98% alpha-cellulose content, sufficient to make it usable as a raw material for rayon by either the cuprammonium or acetate process.

But though attractive, these prizes are not easily won. Nitric pulping has its disadvantages: the corrosive solutions require the use of acid-proof equipment, the reaction is sufficiently exothermic to cause overheating and degradation of the pulp product.

The advent of Krupp's V2A stainless steel solved the first problem, enabled I. G. Farbenindustrie to build the first commercial nitric pulping mill in 1938 at Wolfen, Germany. Though successful in producing pulp from beech wood, the procedure employed by Farben depended on cheap nitric acid waste to make it economical. The major problems that prevented nitric pulping from becoming technically feasible and economically competitive still remained to be solved.

Refrigeration Key: Newest wrinkle in the Delbay version of nitric pulping is the use of refrigeration to control the temperature of the nitric acid solution. Controlled cooling not only eliminates undesirable weakening of the cellulose fibers, but also minimizes the amount of acid required to accomplish delignification. Consuming only 300 lbs. of nitric acid per ton of bleached pulp, the process is said to cost 20% less than sulfite pulping.

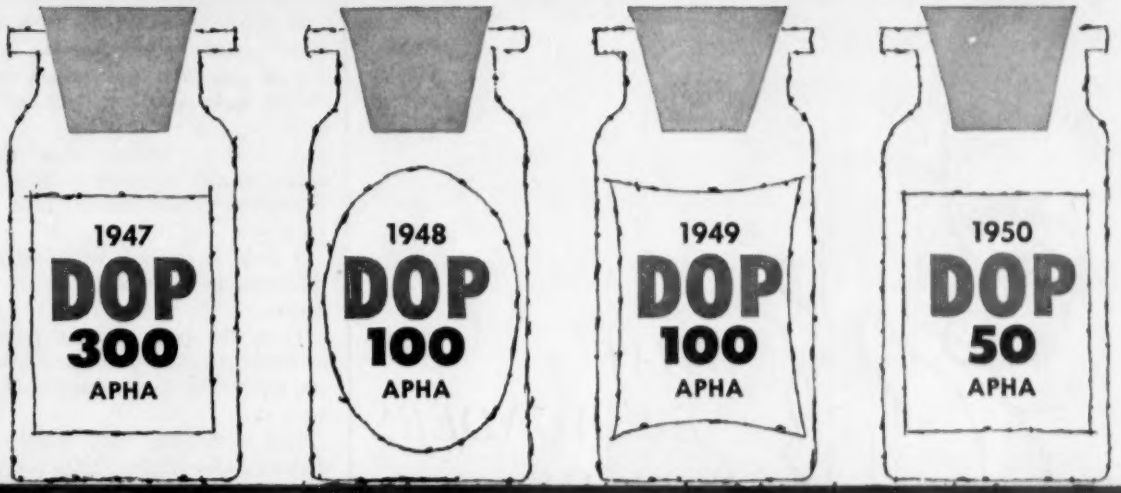
Another novel feature of the Delbay process is its ability to handle wood without debarking. This permits it to be used for pulping any size tree, even branches or brushwood unsuitable for conventional pulping operations. While the elimination of debarking may be an important consideration in parts of the world where trees are scarce, U.S. pulp manufacturers feel that efficient, inexpensive debarking methods currently available are good insurance for clean, high-quality pulp.

Broad Source: Because nitric pulping does not attack the cellulose fibers, it is well suited to processing characteristically short-fibered hardwoods. In fact, it is claimed that paper made by the Delbay process from mixed deciduous woods, or even straw, bagasse, cotton brush, etc., is equal to paper made from 100% spruce or fir pulp by the sulfite process. But until these claims can be substantiated by a commercial product, papermakers in this country are, Missourian-like, waiting to be shown.

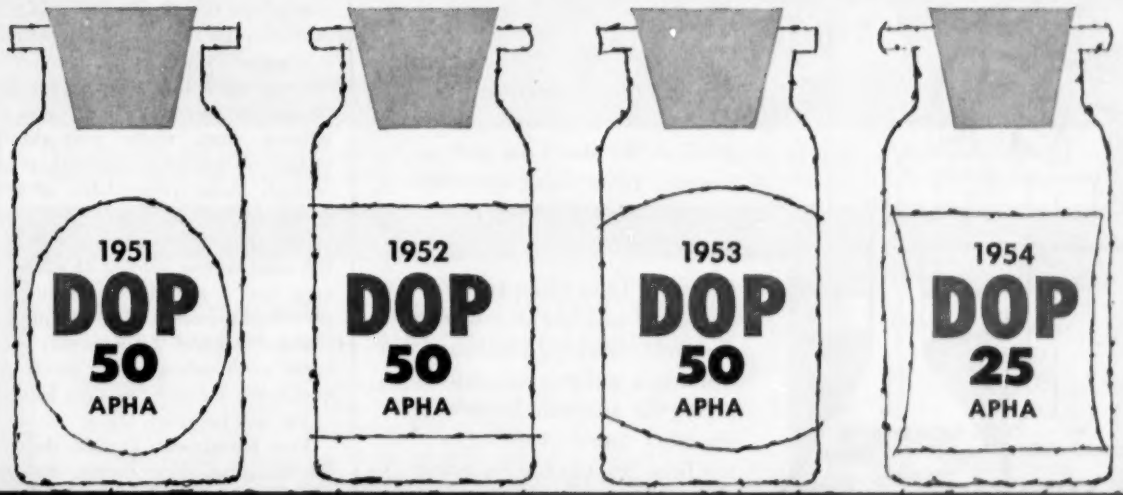
The proof may be forthcoming in the fall when the process makes its commercial debut in a 20-ton/day plant in northern France. Currently under construction, the plant is designed to produce pulp from wheat straw. The sequence of operations:

- Ground wheat straw is charged to a 30-ft.long nitration tank in which it is digested for four hours by a 42% solution of nitric acid. The straw is stirred and distributed by adjustable paddles throughout the length of the tank.
- Digested straw passes from the nitration tank into a second 30-ft. tank where successive countercurrent wash-

The DOP color standards



of the industry have been—and are—



those established by Eastman

Before Eastman began production of dioctyl phthalate the accepted industry color standard was 300 APHA.

The first Eastman specifications in 1948 called for production of a 100 APHA dioctyl phthalate. Then in 1950, this was lowered to 50 . . . and in 1954, to only 25.

Eastman has led the way in the steady improvement of DOP quality. New production and refining methods have produced in today's Eastman DOP a truly high quality dioctyl phthalate whose combination of low color, low odor, low acidity, high heat stability and high ester content is unsurpassed.

We invite you to test the high quality of Eastman DOP in your own laboratory or in your own formulations. Write for specifications and sample quantities.

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—412 Main St.; St. Louis—Continental Bldg. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
subsidiary of EASTMAN KODAK COMPANY

WHAT NEW WONDERS WILL HE DISCOVER?

His is a proud, rewarding profession. He produces new products for man's use and comfort. In so doing he creates new jobs, new factories, new ways of living.

Guaranty Trust Company is a long-time associate of our great chemical industry. This team working together—one supplying the scientific knowledge, the other sound financing—has been responsible for many a 20th century miracle.

May we put our banking facilities—and our knowledge of the financial needs of the chemical industry—to work for you?

Guaranty Trust Company of New York *Capital Funds $395,000,000*

140 Broadway, New York 15

Fifth Ave. at 44th St. New York 36 · Madison Ave. at 60th St. New York 21 · 40 Rockefeller Plaza New York 20

LONDON: 32 Lombard St., E.C. 3 · Bush House, Aldwych, W.C. 2

PARIS: 4 Place de la Concorde · BRUSSELS: 27 Avenue des Arts

Member Federal Deposit Insurance Corporation

ings in each of four compartments remove entrained nitric acid solution.

- A four-hour soak in a 1½% solution of caustic soda follows the washing stage, neutralizes remaining traces of acid and dissolves the nitrated lignins.
- A second countercurrent rinse, similar to that following nitration, removes the caustic solution from the pulp.
- Pulp is purified, rewashed and thickened in a set of two revolving drums.

From this point on, the pulp is processed through a chlorine bleach and finished by conventional handling methods.

Part of the nitric acid solution is drawn off after nitration to be brought up to strength by the addition of fresh 60% acid, reused with the next batch. The remaining portion is used to neutralize the weak caustic solution and precipitate the nitrolignins, which are recovered for their value as a fertilizer.

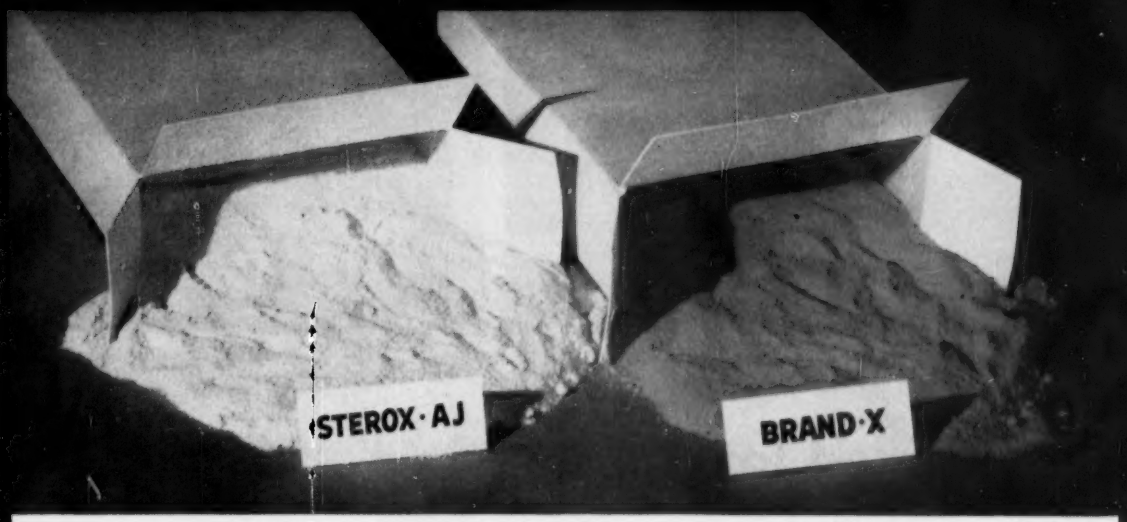
Caustic soda is used at such a low concentration that its recovery from alkaline wastes is not necessary. And effluent from waste neutralization creates no pollution problems, is pure enough to be recirculated if water conservation is important.

The pulping of wood is essentially the same as the pulping of straw, except that a slightly longer nitration period is required. Too, the physical size and shape of the chips may necessitate modification of the mechanical equipment for more efficient handling of the raw material.

Low Investment: Despite the need for acidproof construction, the simplicity of nitric pulping equipment is expected to reduce capital investment to half that required for other chemical pulping plants. By French standards, sulfite pulp plants cost $60-85,000/daily ton, the Delbay process only $35,000/daily ton.

The French process will need every economic and technical advantage it can muster if it expects to find acceptance in this country. For its competition is well established: almost 80% of the 15 million tons of pulp produced here in 1950 was chemically pulped, 7.5 million tons by the sulfate process alone. With a going business of this size in their pockets, U.S. producers will probably remain interested, though skeptical, observers until Delbay proves its point.

Test Proves STEROX AJ Gives Cleanser LONGER SHELF LIFE WITHOUT DISCOLORING



Two cleansers, one with Sterox* AJ and the other with "Brand X." Both are several months old. Note cleanser with "X" is discolored to point of being unsalable. The Sterox AJ cleanser retains its original light color.

NEW NONIONIC SURFACE AGENT OFFERS EXTREMELY HIGH WETTING, DETERGENCY

Sterox AJ is noted for two qualities: unusual stability with strong alkalis and superior surface-active properties. It's an ideal ingredient for all types of cleansers. For example:

In liquid detergents, alone or with anionic foamers • In dairy and food plant cleaning • In detergent sanitizer formulations • In heavy-duty maintenance cleaners with trisodium phosphate and other builders • In car-washing compounds • In metal-cleaning compounds where acid and alkali stability is vital • In dye leveling, soaping, desizing and soaping off textiles • In vat dyes as a dispersing agent • In rewetting cotton for optimum absorbency.

Sterox AJ is a first-rate soil remover. Combined with builders it provides excellent detergency even in hard waters.

As a rewetting agent for paper toweling Sterox AJ increases absorbency. It helps treating solutions penetrate rapidly into impregnated paper and boxboard.

Monsanto makes other types of nonionic, as well as anionic surface active agents, and a full line of builder phosphates. For impartial advice on wetting agents and phosphates, ask Monsanto's technical service group. Write MONSANTO CHEMICAL COMPANY, Inorganic Chemicals Division, 710 North Twelfth Street, St. Louis 1, Missouri.

LOWEST-COST NONIONIC: STEROX CD

An excellent detergent and emulsifying agent, Sterox CD is used in laundry compounds, institutional cleaners, floor cleaners, and others. Check Sterox CD first for any cleaning product. It will mean big savings.

*Reg. U.S. Pat. Off.

MONSANTO
CHEMICALS—PLASTICS

SERVING INDUSTRY... WHICH SERVES MANKIND

Production supervisor Tom Paonessa, in immediate need of material, puts through phone call to communications shack. There, foreman relays call—by two-way radio—to operator of fork truck, who proceeds to storage area to pick up drum.

THE NEW: After consulting his sheet, driver goes

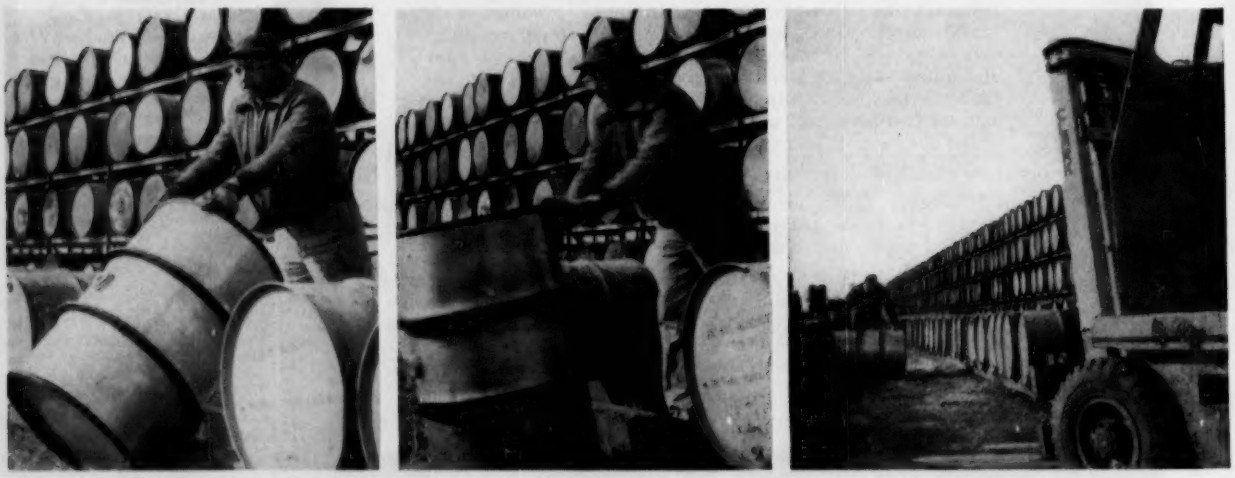
Streamlined for Speed

Good things may come in small packages. But too many small things in too many small packages can play havoc with your materials handling system. At least that's the experience of Trubek Laboratories (E. Rutherford, N.J.).

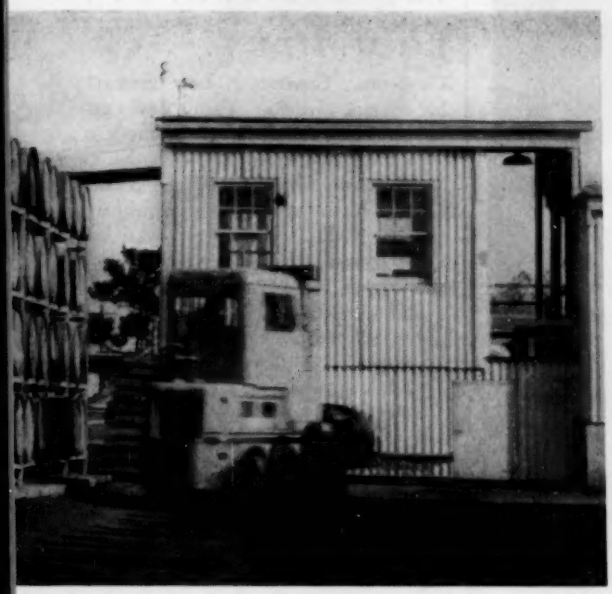
And Trubek is something of an authority on the subject: it makes approximately 400 products; many of them intermittently in multipurpose equipment. This, of course, raises some problems in scheduling, calls for close coordination among all parties concerned. It also poses some unusual problems in moving things around the plant.

As a result, Trubek has packed a bagful of materials-handling tricks (*CW, June 6, '53, p. 34*). But it's still finding that there's room for improvement. Take, for instance, the case of any one of the many products run intermittently. When the operation is halted, there's a sizable quantity of intermediates left in the equipment. Since they're normally too valuable to discard, they have to be stored until the product is needed again. And with the increase in business, storage space was becoming harder to find. Also, storing the material and moving it when needed became more and more time-consuming.

On the Rack: The solution worked up by one of the firm's chemical engineers, Herman Kaplan, is the just-



THE OLD: Driver leaves truck, spots drum, manually tips it and rolls it back to truck. Total time: 7 minutes.



directly to proper section, picks up drum and is on his way in just under one minute.

finished installation pictured on these pages. Instead of being stored side-by-side in rows, or placed on pallets, the drums are now stored on drum racks placed on pavement. And, as is often the case with seemingly simple solutions, the idea is paying off handsomely for Trubek with some unlooked-for dividends.

The most obvious advantage of the new system is the savings in space. By stacking them four high, the firm is able to store the same quantity of goods in a much smaller area. In the crowded northern New Jersey industrial area, that's a significant factor.

In addition, the new rack, turned out to be a big time-saver, reduced—by roughly two-thirds—the time needed for storing or removing a drum. In fact, Trubek, which had previously expected it would have to add another fork truck, found that with the new system, it doesn't need it. Trubek's initial investment in a fork truck is $4400. Add to that the upkeep required for it and you find it doesn't take long for the rack to balance out the initial outlay for the new installation.

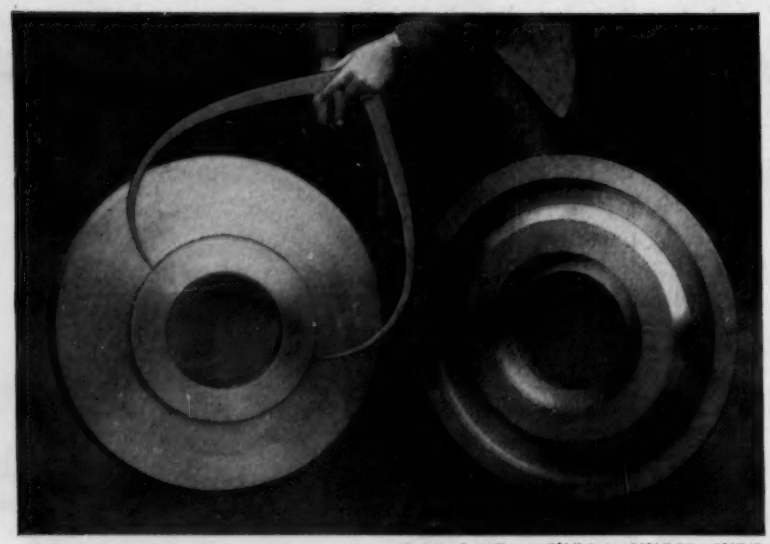
Moreover, any leaks in the drums are much easier to detect on the rack. When dealing with costly materials—as Trubek does—that alone can be a big advantage.

SOS: Normally, the production supervisor plans his schedule well in advance, has any necessary intermediates delivered to the plant a day ahead of the production. On occasion, however, an immediate need for an intermediate arises. And it's at these times that the new system shows off to its best advantage.

DRUM is delivered to door in 3 minutes with new system. Old system took 9 minutes.

For CW's camera, Trubeck simulated such an emergency. The entire operation—from telephone call to delivery at the door of the plant—was clocked in just under three minutes:

At 10:15, Tom Paonessa put through a telephone call to Foreman John Christian for a drum. Christian relayed the call to Fork Truck Operator Harry Wilson by two-way radio, and Wilson proceeded to the storage area (time: 10:16). After checking his sheets for exact location of the drum, Wilson went to it, picked it up and started back to the plant (at 10:17). He laid it down at the door to the plant at 10:18. And, as Wilson points out, the whole job was done without his leaving the truck cab.



Stainless Steel Flange 2⅝" thick x 28⅝" OD x 9¾" ID

forged in stainless steel

and rough machined

by **G. O. CARLSON, INC.**

By working exclusively in stainless steels, the Carlson organization has an expert's knowledge and experience in the field. This is important whether you need plate (large or small, straight or cut-to-pattern), diameters, heads, rings, forgings or other stainless products.

The illustration shows (in a front and back view) a typical forging made of stainless steel. This flange was forged of Type 316 stainless and rough machined in our plant. The customer, by using this Carlson service, was able to finish-machine the part in record time . . . and shipping charges and material waste were held to a minimum.

As just one segment of our over-all service in stainless steels, G. O. Carlson, Inc. produces forgings in all sizes and analyses to chemical industry standards—rough machined, ready for finishing.

If you need stainless steel, our engineering staff will be glad to help . . . just send along your inquiry.

Stainless Steels Exclusively

G. O. CARLSON, INC.

Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)

THORNDALE, PENNSYLVANIA

District Sales Offices in Principal Cities

PRODUCTION. . . . .

EQUIPMENT

Concentric Control: A new indicating-control temperature unit designed for industrial use is the latest offering by Burling Instrument Co. (Chatham, N.J.). Centered about two concentric tubes, which are exposed to the heat, control is obtained through differential expansion of the tubes. This motion is multiplied through a lever, which actuates a snap-action switch. Independent temperature indication is provided by a bi-metallic dial thermometer sheathed by a separate tube and extending into the reaction mass.

•

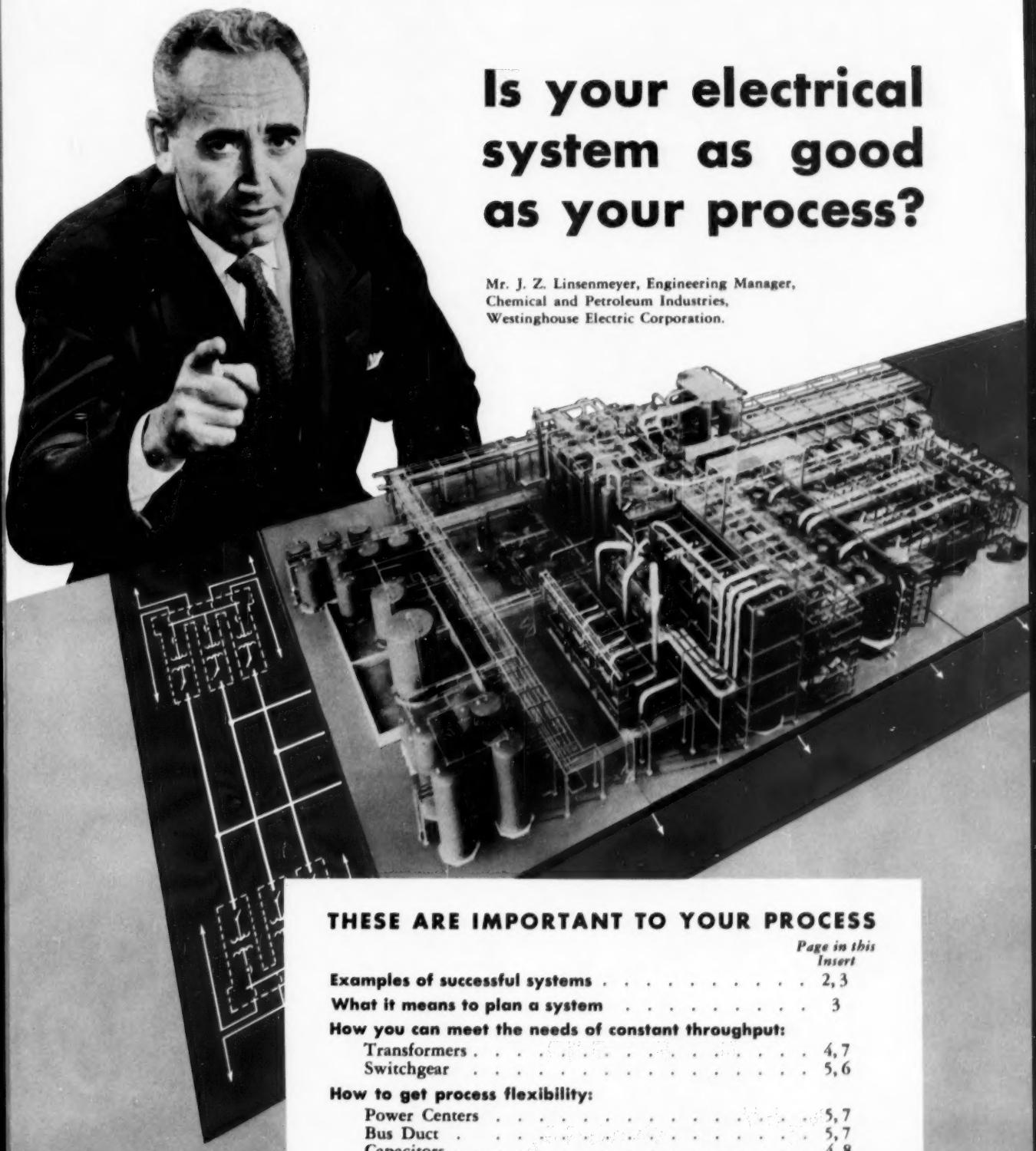
Valve Variation: For those interested in reduced valve maintenance, Crane Co. (Chicago) is introducing a new line of alloy gate, globe, and angle valves. The line features a split-wedge disc design in the gate valves, an improved disc-stem connection in the globe and angle valves. As a result of these improvements, says Crane, disc chattering is eliminated and seat wear is reduced.

•

Technical Translation: Under an exclusive licensing agreement with Societe D'Innovations Chimique, S.A. (Sinnova) and its allied company, American Alcolac Corp., Rust Engineering Co. (Pittsburgh) is offering to any firm in the U.S. or Canada a continuous high-pressure hydrogenation process of making fatty alcohols.

Commercially proved by Sinnova at its three detergent plants in France, the process works like this: A stream of fatty acids (from tallow or vegetable oils) is fed continuously into a reaction tower, where in the presence of a nickel-chromium catalyst it reacts with hydrogen to form fatty alcohols. The crude alcohols are separated, refined by fractional distillation while the catalyst and unreacted hydrogen are recovered.

Along with the material feed streams, the process is said to provide efficient heat recovery. As for plant design, Rust offers an outdoor, all-weather physical profile to suit climatic conditions in any part of the country, together with all technical aspects, investment and operating costs translated to American requirement. Also, facilities are available for test and data runs on any special raw materials that a company may wish to hydrogenate.



Is your electrical system as good as your process?

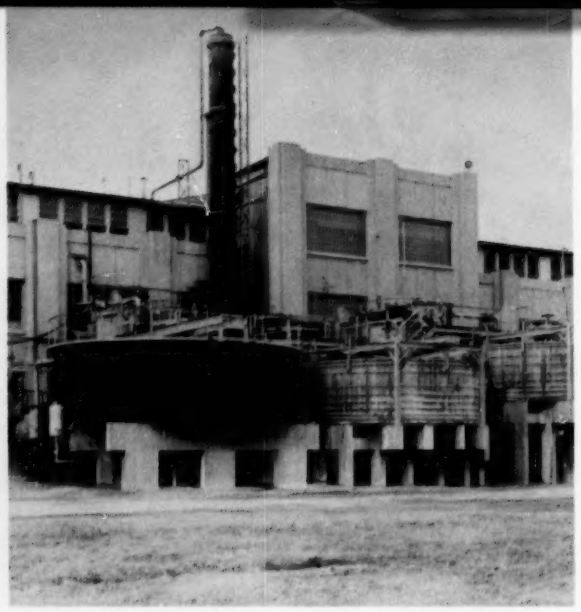
Mr. J. Z. Linsenmeyer, Engineering Manager,
Chemical and Petroleum Industries,
Westinghouse Electric Corporation.

THESE ARE IMPORTANT TO YOUR PROCESS

	Page in this Insert
Examples of successful systems	2, 3
What it means to plan a system	3
How you can meet the needs of constant throughput:	
Transformers	4, 7
Switchgear	5, 6
How to get process flexibility:	
Power Centers	5, 7
Bus Duct	5, 7
Capacitors	4, 8
Westinghouse can help you line up primary and secondary power	8

YOU CAN BE SURE... IF IT'S

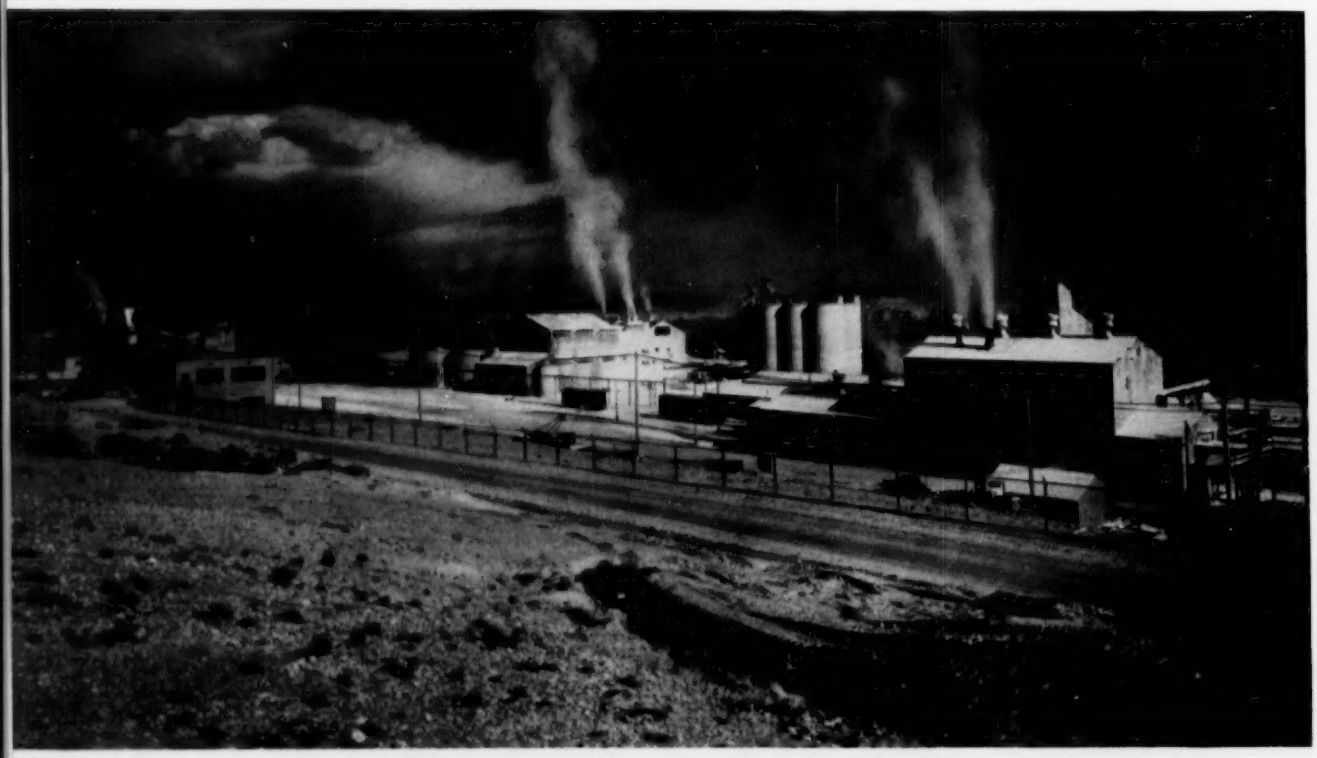
Westinghouse



This plant, producing chlorine, caustic soda and other chemicals, is served from front to back door with a complete Westinghouse power generation, distribution and utilization system. A secondary distribution system of the selective radial type protects this operation against thousand-dollar-a-minute down time.

American Cyanamid engineers and Westinghouse worked out a system that will pay dividends for a long time to come. The answer was in providing a group of power centers that can be quickly and easily expanded into a secondary network system as new buildings planned are put in place. Here's Westinghouse equipment matched with a plan for expansion.

Westinghouse, in cooperation with Intermountain Chemical Co., Westvaco Division, Food Machinery Corp., developed here a complete power distribution system, providing benefits not only of an integrated arrangement, but of one company responsibility for design, manufacture and application of equipment.



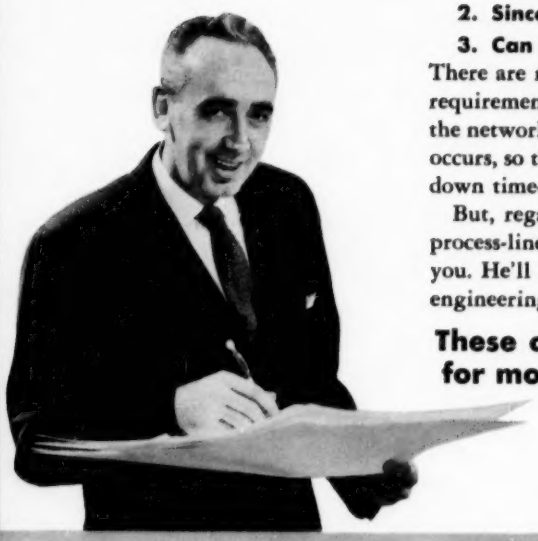
YOU CAN BE **SURE**...IF IT'S

Westinghouse can help you match planning with equipment . . .

to bring your distribution system up to par

Early and thorough planning of your power distribution system is the only effective answer to these three basic questions:

1. **Will my electrical system be adaptable to changing load conditions with minimum service interruptions?**
2. **Since down time is very costly, will I get maximum reliability?**
3. **Can I get good voltage regulation in spite of load fluctuations?**

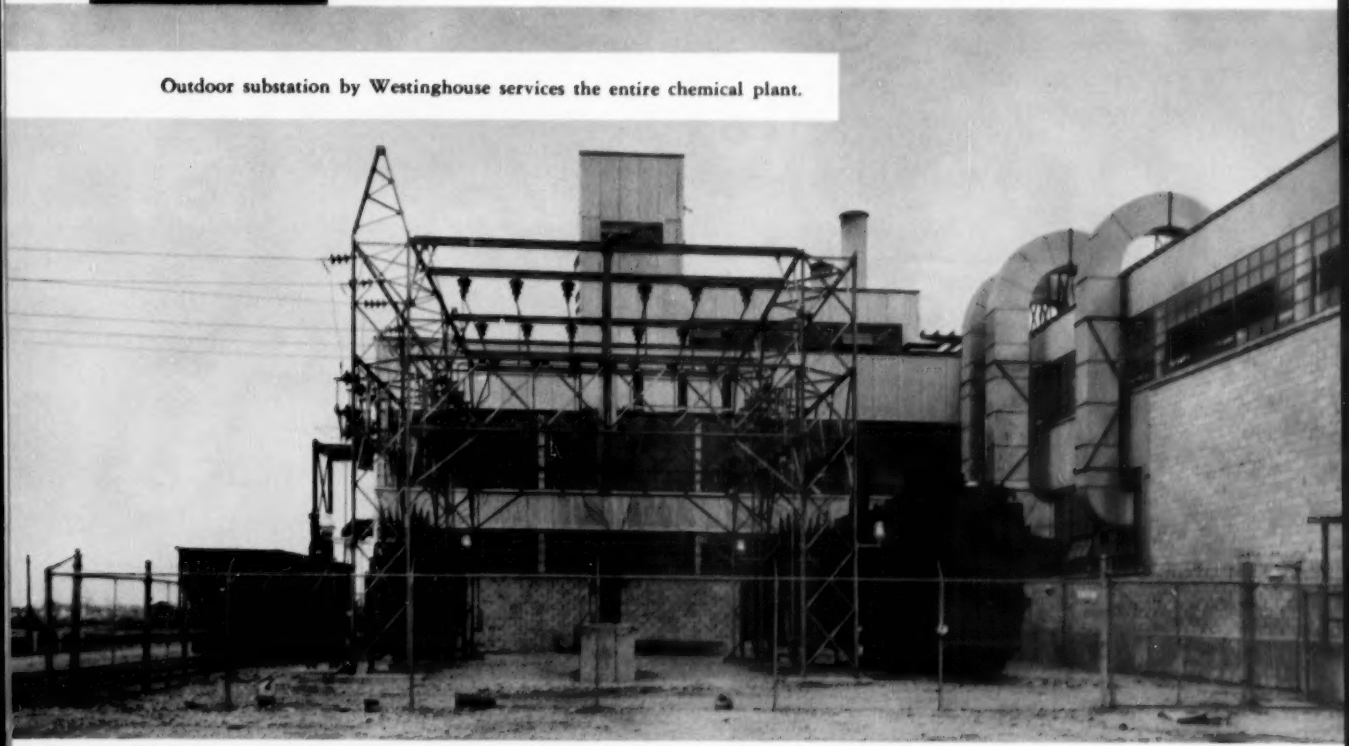


There are many fine electrical systems that can be adapted to fit your process requirements. One modern way to support heavy production schedules is with the network system. This system provides alternate power routes when trouble occurs, so that faults on the line can be shared throughout the system, without down time—a kind of electrical insurance.

But, regardless of the system selected, plan it early, and well, along with process-line planning. Your Westinghouse Representative is ready to assist you. He'll make available to you not only the right equipment, but also the engineering services you need to get started on the right foot.

These chemical plants integrated secondary power for more efficient, dependable production

Outdoor substation by Westinghouse services the entire chemical plant.



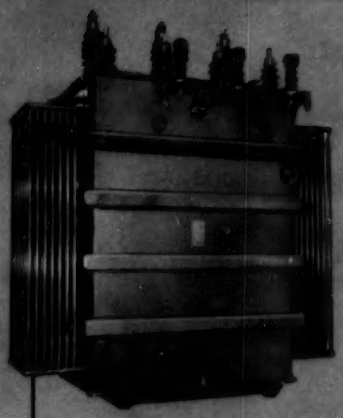
Westinghouse

Westinghouse coordinated distribution equipment maintains constant throughput

It's not good business to gamble against power failure when the penalties run high on continuous process lines. And there *are* ways of providing maximum reliability, without standby diesel-generator sets or other expensive makeshift arrangements.

This choice of types of equipment and the kind of power distribution layout will depend on the problems in your plant—change-over, expansions, modernization, new processes or products, and so on. Westinghouse can help you select the right equipment and coordinate it to bring out the specific advantages that best suit your requirements.

On these pages are shown several of the major product elements of a typical process power distribution system, and what each can contribute to its over-all effectiveness.

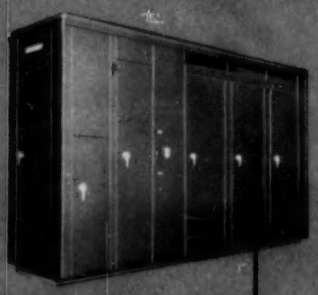


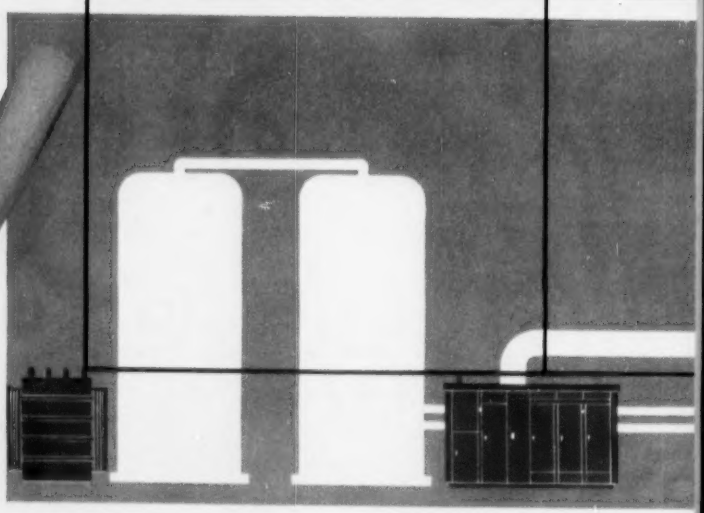
Standardized Type SL Transformers

Liquid-Filled Westinghouse Type SL Distribution or Power transformers for chemical use offer the many economies of standardization, plus design advantages based on years of tested and proved experience.

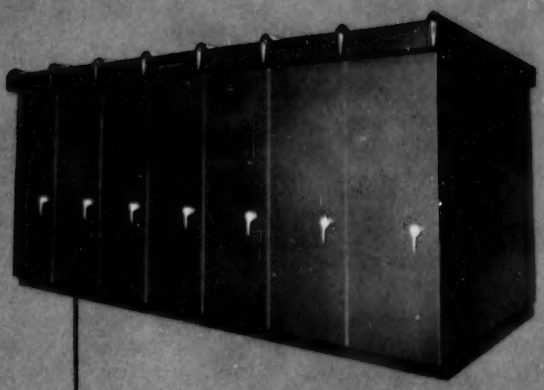
Capacitors

Large Metal Enclosed Westinghouse Capacitor Equipment provides important cost savings, by improving voltage regulation and reducing ampere loading on circuits and transformers. For indoor or outdoor use, these capacitors are rated 230 to 13,800 volts.





YOU CAN BE **SURE**...IF IT'S



Metal-clad Switchgear

To protect heavy capital investment and prevent costly interruption of chemical processes, switchgear must be exceptionally reliable. Westinghouse Metal-Clad Switchgear more than meets this basic requirement — offers outstanding advantages for chemical service.

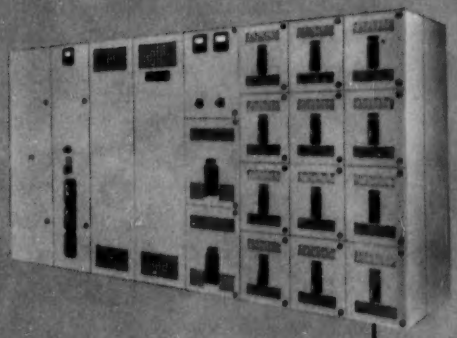
DH Air Circuit Breakers provide positive protection — employ De-ion® arc extinction, the most effective method known. There's less contact burning — less maintenance — more reliability. Breakers draw out horizontally — can be changed in three minutes flat, vital for service continuity.

Corrosion is licked by Bonderizing enclosures *after* assembly — prime and finish painting. For outdoor service, undersurfaces are protected by an all-weather coating.

Standardization in manufacturing keeps your costs down. Special engineering is eliminated. Switchgear can be expanded, re-arranged or relocated with only minor wiring changes and no loss in value.

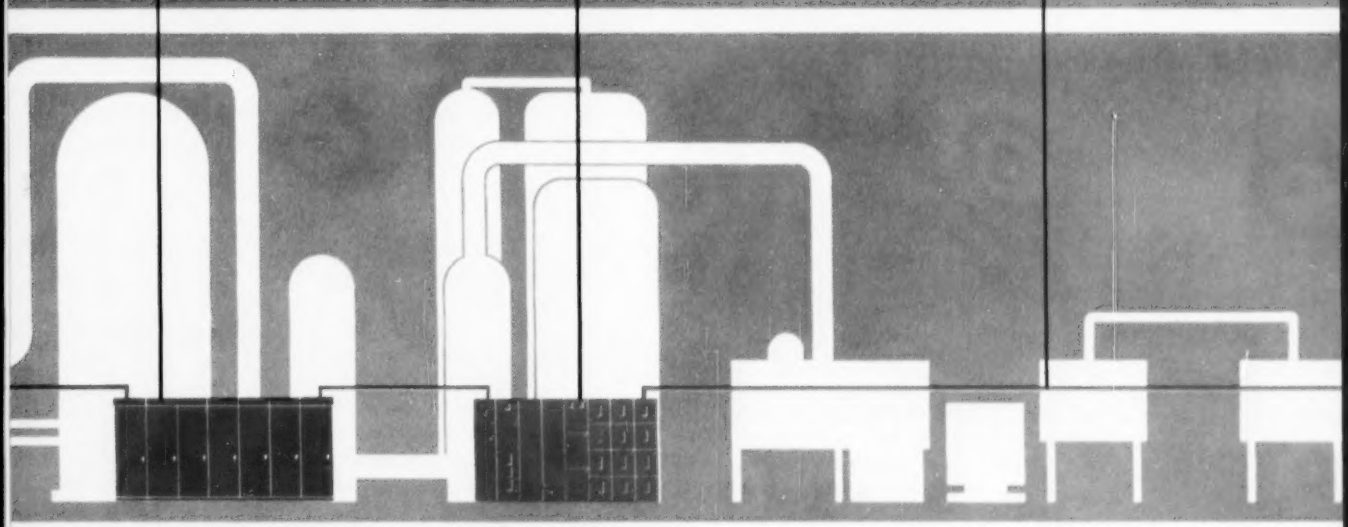
Dry-type Power Centers

Westinghouse Dry-Type Power Centers include in one line-up an air-cooled power transformer, high and low voltage switchgear equipment—all coordinated and tested at the factory for highest operating efficiency. Since all parts are of Westinghouse manufacture, you receive the plus benefits of unit responsibility.



Bus Duct

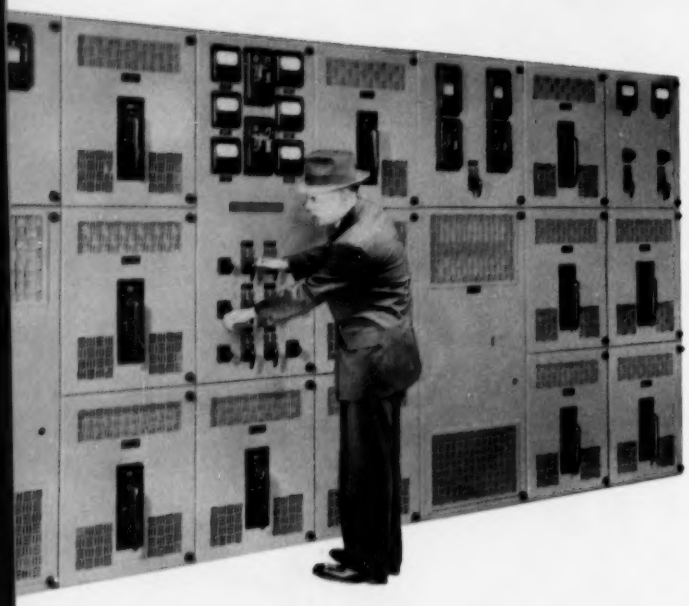
Bus duct is the modern, convenient way of carrying power in both distribution and utilization loads over long or short runs. Four types provide for economical and efficient handling of power under all conditions, indoors and out.



Westinghouse

EQUIPMENT FOR SPECIAL PROCESS NEEDS ON THE FOLLOWING PAGES.

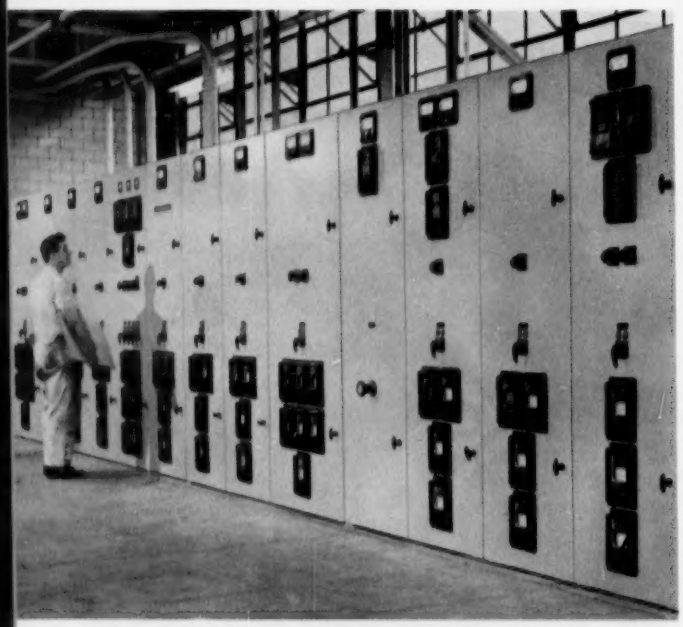
Westinghouse equipment flexibility meets problems of



. . . special servicing, with Westinghouse Low-Voltage Switchgear

One basic problem is obsolescence, not only of production equipment, but of the arrangement of power serving that equipment. Here are three outstanding advantages of Westinghouse Low-Voltage, Metal-Enclosed Switchgear to help you in this servicing problem.

1. **Unitized design eliminates special design and engineering expense for the original installation and, at the same time, provides custom-built preciseness in meeting application requirements — number and rating of breakers; selection of attachments, instruments and relays.**
2. **With 10 basic units and a selection of standard instrument panels, future additions or replacements can be easily and quickly made any time.**
3. **All breakers are of drawout type and can be moved from "connected" to "test" or "disconnected" positions, or removed completely.**



. . . special safety requirements, with Westinghouse High-Voltage Switchgear

Westinghouse High-Voltage Switchgear is completely dead-front. All breakers may be closed or tripped without opening doors or otherwise exposing live parts. Each breaker is enclosed in an individual metal compartment. Interlocks are provided so that the compartment door cannot be opened while the circuit breaker is closed. Bare buses, cable connections and instrument transformers are placed in full-height rear compartments and separated from breaker compartments. Interlock and positioning devices assure safe removal or replacement of breakers.

As added protection, Westinghouse Switchgear structures are completely Bonderized after fabrication, inhibiting corrosion and assuring a long-lived finish.

YOU CAN BE **SURE**...IF IT'S **Westinghouse**

. . . especially designed capacity, with Westinghouse Power Centers

Dry-type power centers, capable of being installed in the center of your load area, give you all the advantages of high voltage close to the load. For instance you will gain:

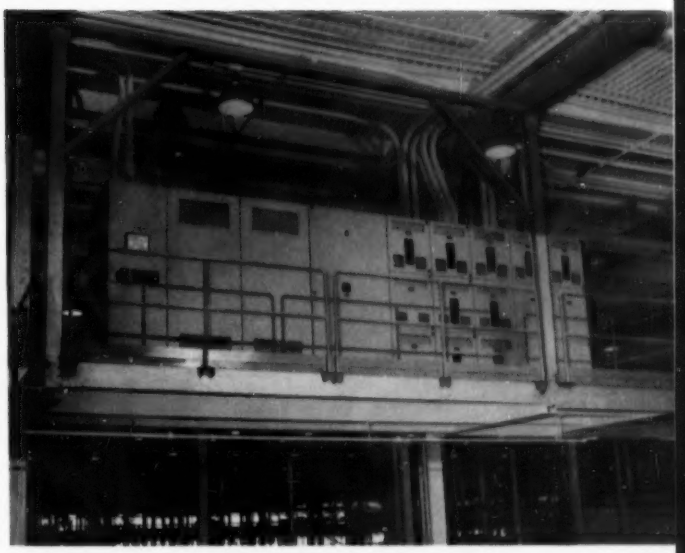
Greater Safety—Because of their inherent design which eliminates the need for oil, Westinghouse Dry-Type Power Centers are safe from explosion. No vaults or safety barriers are necessary.

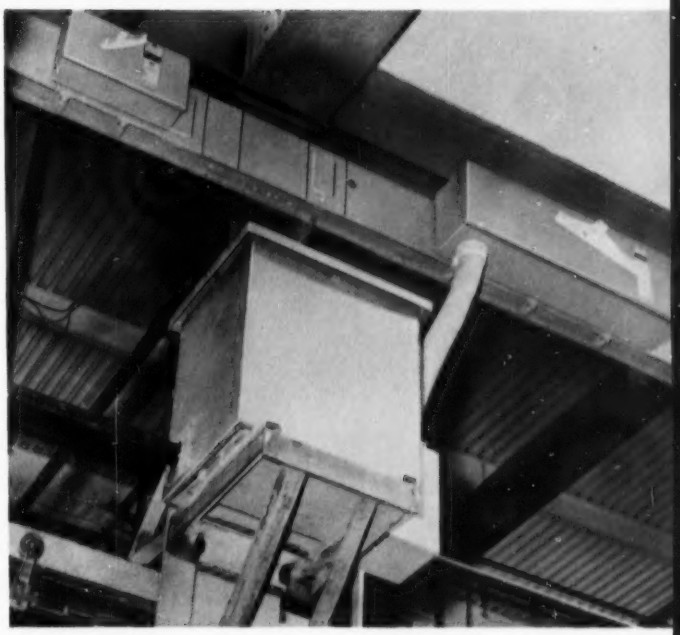
Lower Line Loss—By installing a Westinghouse Power Center in the center of your load area, you eliminate the need for long secondary lines and their resulting power losses. A loss of only 10% of rated voltage can cut furnace heat generation, for instance, to 81% of normal.

Improved Regulation—Voltage drop on power lines to motors causes low starting torque and increased heating, lessening their efficiency and shortening service life. Westinghouse Dry-Type Power Centers help minimize operating voltage drop and assure good regulation.

Lower Secondary Cable Costs—Shorter secondary lines mean substantial savings in copper. Realizing these savings throughout an entire plant distribution system can reduce over-all investment considerably.

Power centers include transformer and switchgear in one compact structure.





. . . especially designed spaces, with Westinghouse Bus Duct and Dry-Type Transformers

Westinghouse Bus Duct is an ideal power distribution medium, because of its universal flexibility. It can be installed quickly and easily to suit physical space needs of your plant. Duct is available in 10-foot prefabricated sections with elbows, tees and crossovers, so that the line can be run in any direction, around obstructions and corners. It can be placed flat or endwise, in batteries or singly, against ceilings or walls, parallel with air-conditioning duct or other lines—and with complete safety. Tight layouts and obstacles are no problem.

In modernization or conversion work, duct is fully salvageable. It can be dismantled, reassembled, expanded—no expensive altering or moving of structures and equipment often necessary with conduit-cable systems. Specify flexible Westinghouse Bus Duct.

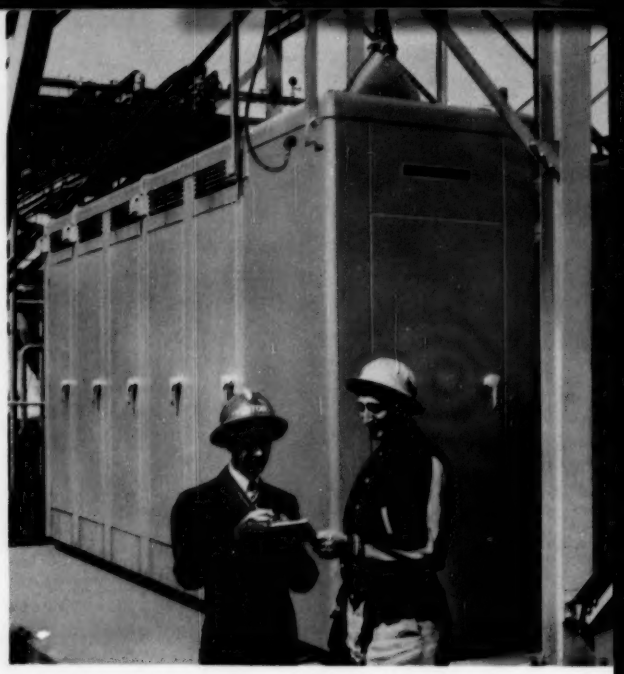
In the picture above, underneath the bus duct, is a Westinghouse AVRB Dry-Type Transformer. Placed strategically throughout a plant, these transformers bring power conveniently, economically close to the load. Basically simple, dry types contain no liquids to change and are therefore easy to maintain, safe from explosion.

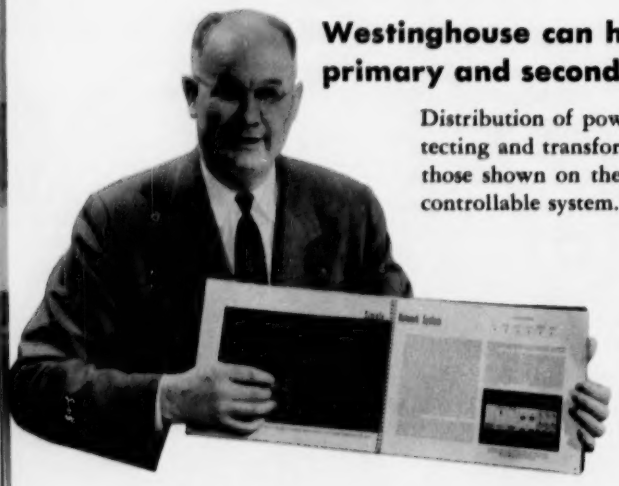
Large metal-enclosed capacitor equipments control voltage levels

Today, in many chemical plants, large amounts of kilovars are needed to provide voltages at levels required for efficient operation of process equipment and maintenance of product quality.

Westinghouse Inerteen® Capacitors are the ideal source of these kilovars. Capacitors are low in initial cost, require less maintenance than other methods and save additional investment in transformer capacity.

For these applications, Westinghouse offers metal-enclosed capacitor equipments—capacitors, fuses, busbars, connections, switches and accessories enclosed in safe, weatherproof, metal housings. Averaging less than $8.00 per kvar, these units are standardized in design and factory assembled—save engineering and installation expenses.





Westinghouse can help you match up primary and secondary power

Distribution of power includes carrying, controlling, regulating, measuring, protecting and transforming electrical energy. Many pieces of equipment, other than those shown on these pages, must be considered in planning a flexible, reliable, controllable system. Your Westinghouse Representative can help you select them, coordinate them and tie them in with your primary power.

When you are planning on building, expanding or modernizing, call your local Westinghouse Office. We can offer you a complete line of electrical equipment, specifically designed for processing plants. MP-3009

Mr. Perry Croco, Consulting & Application Manager, Central Region, Westinghouse Electric Corporation.

Westinghouse maintenance service is nationwide

When repairs are needed, they can be made quickly and properly in any of 38 well-equipped apparatus Repair Shops spotted across the nation. Engineers, operating out of 56 Field Offices, are always ready to provide periodic inspections.

Fast delivery of genuine Westinghouse Renewal Parts from stock in 31 locations enables you to keep low parts inventories at your plant.

Check literature desired and send to Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa.

Name_____

Firm_____

Address_____ City_____ State_____

- ☐ Network Selector Card
- ☐ Heavy-Duty, Metal-Clad Switchgear **B-5306A**
- ☐ Power Centers **B-4162**
- ☐ Capacitors **B-3966A**
- ☐ Transformers That Cut Distribution Cost **B-4249A**
- ☐ Bus Duct Manual **B-4272B**

YOU CAN BE SURE...IF IT'S Westinghouse

MP-3009

Are Commercial Labs Menaced by Tax-Free Institutes?

Fanned by a recent change in the tax laws, commercial laboratories' smoldering resentment over "tax-free competition" has once again burst into flame. In Washington, D. C., last week, the American Council of Independent Laboratories filed a brief with the Bureau of Internal Revenue, requesting public review of the offending statute—section 501 (c) (3) of the 1954 tax code—which grants tax exemption to nonprofit scientific organizations doing testing for public safety. Ordinary testing activities are normally taboo for tax-free groups. ACIL calls the revision "a serious breach" of the legal barrier protecting tax-paying in the testing business. In short, the independents, represented by ACIL's President Lewis Herron (head of Cleveland's James Herron Co.) feel menaced by the threat of legally sanctioned competition from nonprofit research groups. "No such thing," is the reply of Harold Vagtborg, president of Southwest Research Institute (San Antonio, Tex.).

"Yes," says ACIL's Herron.

"The way we see it, practically any form of commercial testing could be interpreted as for the public safety. Suppose, for instance, a maker of steel castings is having deoxidation problems. He may go to a nonprofit research group and have some photomicrographs and tensile tests run. Since these tests involve the performance of the castings, and the castings might be going into a lift-bridge or an automobile, it might be easy to define this operation as in the interests of public safety."

But Herron's group is not primarily after a specific definition of "testing for public safety," thinks the phrase is too broad to define; rather, it seeks the elimination of the controversial proviso.

"Under the current ruling," Herron states, "nonprofit research groups might be free to provide product testing and analysis and inspection to the aircraft industry, possibly the automotive industry, and practically all defense industries. It could lead (and in some cases

"No," says Southwest's Vagtborg.

"I do not consider that there had been any barrier raised around research institutes such as ours, through the previous regulations of the Bureau of Internal Revenue."

Vagtborg agrees that the new law is open to criticism, puts the problem this way: "Lack of definition in the 1954 tax law regarding exemption for organizations organized for testing for public safety can lead to abuse and make the role of the Bureau of Internal Revenue very difficult. The term 'testing for public safety' is so broad it can apply to any type of testing."

"But", he continues, "I do not believe the tax-exempt research institutes are taking or will take advantage of what ACIL refers to as a tax loophole." Vagtborg fears that the embattled provision may encourage unethical commercial firms to claim "public safety" tax exemption in unwarranted cases.

As for ACIL's specific reference to the possible role of the nonprofits in testing building materials, for example, Vagtborg replies: "Southwest Research Institute

. . . when WAX is the PROBLEM!

Sometimes big plans can hinge on small items. For instance—you've checked the demand and know the public will buy your new product and cry for more . . . but, unfortunately, that new product formula requires a reliable source of supply for a special type of microcrystalline wax. If you could just solve that one problem . . . Mister, you need a *specialist!* Wax is Bareco's business . . . their *only* business. They can offer you the type of technical counseling you require. So don't drop those big plans into "deep 7", contact the Bareco Oil Company . . . SPECIALISTS in microcrystalline wax.

Be Square 190/195 melting point
Be Square 180/185 melting point
Be Square 170/175 melting point
Starwax 180 minimum melting point
Ceruweld 155 minimum melting point
Ceratak 155, 165 minimum melting point
Victory 155, 165 minimum melting point
Petronauba emulsifiable petroleum wax for polish formulations.

Write for samples, specifications, prices.

BARECO OIL CO.
BOX 2009 • TULSA, OKLA.

Story begins on p. 49

has led) to tax-free work on such product applications as fireproofing of fabrics, examination of soils for construction foundations and food product analysis."

He makes it plain that the brief filed by ACIL is in no way aimed at making nonprofit research organizations pay taxes on fundamental research projects, or in gaining nontaxable status for commercial testing laboratories.

What's more, he doesn't think the net effect of this latest change in the tax code has been too damaging, yet, to the commercial labs. But, cautions Herron, the incursions have started and are gaining momentum.

His group strongly resents the manner in which the controversial clause was rushed into law after closed Senate Finance Committee hearings. And it wants to know whether the Joint Committee on Internal Revenue realized that this amendment reversed a previous Treasury decision.

"What the passage of this clause really did," Herron maintains, "was to reverse a stand taken by the Treasury Dept. on Sept. 3, 1952 (ruling 5928) that only fundamental research (and not applied research, testing, etc.) could be tax deductible." He emphasizes that it was ACIL's belief that this ruling (which came after 10 years of petitioning by ACIL) set for good and all time the boundaries between fundamental and applied research.

The new tax code is "a complete surprise," vows Herron. He and his organization disclaim any knowledge of how the words "testing for public safety" came into being. If nothing more, Herron asserts, "the insertion of a clause with such broad implications demands a public hearing." Getting one is the first move on ACIL's calendar.

has not and will not as a matter of policy design buildings or test building materials, regardless of the new law. In the building area, as in others, we will continue to do research and development work.

"As general practice we will continue to employ and encourage the growth of commercial testing laboratories. For example, such testing laboratories pass upon specifications of structures and materials (as a public safety measure) in all our own laboratory building construction. While we undoubtedly are qualified to do this, we feel that since we are not engaged in that business it is wise to call in the specialists."

Vagtborg states flatly that no ordinary testing is done at Southwest and therefore the law doesn't make any difference. "We will not go into that field of activity. Any request for work that our technical staff considers is ordinary testing is always referred to commercial laboratories."

On that point he is emphatic. And to bolster this contention, Vagtborg refers to Southwest's trust indenture (under which the institute was founded) that states the institute's function: "to maintain and operate research facilities available to industry and the public generally, and to conduct other activities . . . for charitable, educational, and scientific purposes." The key word, naturally, is research.

Vagtborg, of course, speaks only for himself. But his views reflect the opinions of the great majority of his colleagues in the nonprofit institutes.

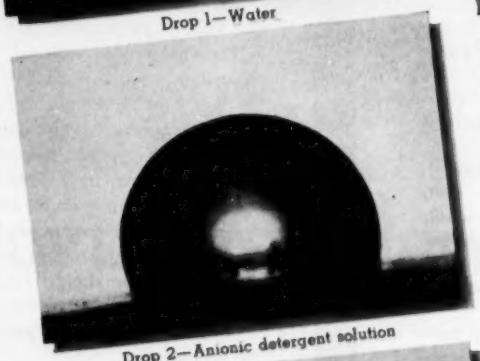
There's no uncertainty among leaders of other nonprofit research institutes and foundations. Their case: research institutes are set up for research, have neither the desire nor the type of staff and facilities to make a profit from commercial-type testing.

How does TRITON X-100 clean so many surfaces?

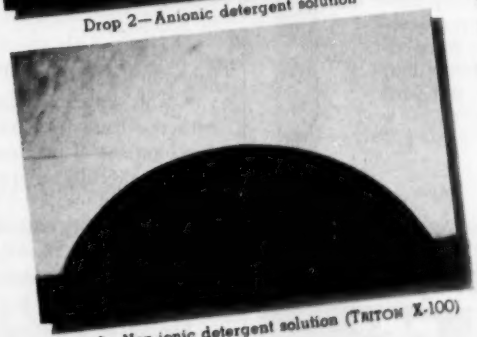
TRITON X-100 is a Rohm & Haas non-ionic detergent exceptionally effective as a cleaner for hard surfaces such as aluminum, steels, copper, brass, zinc, iron, ceramic tiles, hard rubber, linoleum, glass and many plastics.

One important reason for the all-inclusive cleaning power of TRITON X-100 is its ability to *preferentially* wet the surfaces it cleans. This phenomenon is graphically illustrated in the micro-photographs shown here. They show a typical substrate (steel in this particular case) completely immersed in oil. Individual drops of anionic and non-ionic detergent solutions have been placed on the steel plate with a micropipette. For comparison —a drop of water is also shown.

Drop 1—Water



Drop 2—Anionic detergent solution



Drop 3—Non-ionic detergent solution (TRITON X-100)

Drops #1 and #2 retain their semi-globular shape—they show a high contact angle between the drop and the test surface. The water and the anionic solution are unable to displace the oil film from the steel surface and therefore their cleaning power is limited.

Drop #3 (TRITON X-100 solution) has flattened out It hugs the surface and shows a low contact angle It is able to wet the surface *preferentially*—it displaces the oil film from the surface and therefore, does a better cleaning job.

TRITON X-100 is such an effective and universal cleaner because its solutions immediately develop a low contact angle with *many* surfaces; because it quickly wets substrates; and because its solutions readily displace soil from the surfaces; and finally, because TRITON X-100 can be easily rinsed off—leaving a sparkling clean surface.

Further information on test procedures for laboratory evaluation of hard surface detergency is available upon request.

CHEMICALS FOR INDUSTRY

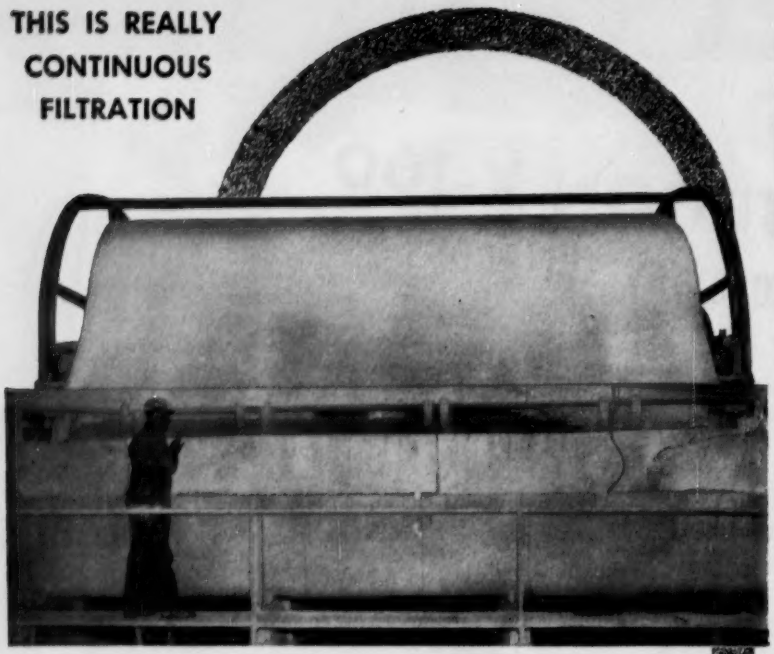
ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

TRITON is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

THIS IS REALLY CONTINUOUS FILTRATION



21 FEET OF UNBROKEN FILTER CAKE

24 HOURS A DAY . . . with FEinc STRING FILTERS

The clean, unbroken sheet seen here is composed of refined kaolin which is coming off the discharge end of a FEinc String Filter at J. M. Huber Corporation, Huber, Ga. The uniformly dewatered cake, although of a sticky character, is cleanly lifted from the revolving filter drum by closely spaced strings which carry the clay blanket to the discharge roll, where it drops into the trough.

The FEinc String Filter is successfully delivering cleaner, dryer cakes with materials ranging all the way from thin, soupy slimes, colloidal gels, greasy waxes, etc., to flocculent, fibrous or crystalline cakes . . . with less "down time" and lower maintenance costs. In a surprising number of cases this FEinc is the most economical of all filters for the "easy" jobs as well as the tough ones.

The FEinc String Discharge Filter is only one of many continuous filters now made by Filtration Engineers. Our engineering service is the finest available, backed by 35 years of experience, and backed by the ability to deliver filters that are tailor-made to fit the job . . . at no more than standard costs. Write or telephone us today for more details.

Test the actual performance of FEinc . . . at low cost . . . rent this small pilot-plant filter with interchangeable string or scraper discharge. Write for facts.

Filtration Engineers, Inc.

CUSTOM DESIGNERS AND MANUFACTURERS OF ALL TYPES OF CONTINUOUS FILTRATION EQUIPMENT

FEinc

42 155 ORATON STREET • NEWARK 4, N. J.

RESEARCH . . . . . .

WIDE WORLD

CARNEGIE'S BUSH: Sought—a lasting patent cure.

Log Jam Prescription

After three months of anticipation, government and industry last week was getting a look at the report of the Advisory Committee on Applications of Machines to Patent Office Operations.

Set up to seek ways of breaking the patent log jam, the group, headed by Carnegie Institution's President Vannevar Bush, cautions against "a transition to complete mechanization at this time," recommending instead a step-by-step development "taking full advantage of the new advances as each successive step is taken."

Slated for immediate attention are five committee recommendations:

- Machine searching of compositions of matter should be put on an operational basis.
- Reclassification of patents should be accelerated.
- A research unit should be established in the Patent Office.
- The Patent Office should join with the Bureau of Standards in the development of machines and techniques specifically adapted to the former's operations.
- An advisory committee should be attached to the Office of the Secretary of Commerce, to stimulate and coordinate patent studies.

Aiming at a lasting cure, the program will get the avid attention of 700 harried* patent examiners.

*The backlog of applications awaiting action has bulged to 200,000 and is still growing.

PROVED PERFORMER

This handsome little Ford runabout has had a well-cared-for life. Now, almost fifty years old, its engine purrs, its paint and brass gleam as though it were a youngster just off the assembly line.

Dependable quality that has stood the test of time is a point of pride in Esso Petroleum Solvents, too. Our production facilities and laboratories have been in the business for a long time, during which product quality has been developed to an amazingly high level. Find out for yourself, next time you order. Specify Esso Solvents – famous for their dependable high quality and performance.

You can depend on Esso Solvents for

MULTI-STORAGE AVAILABILITY—water terminals in industrial centers.

MODERN HANDLING METHODS – separate tank storage, pumping lines, tank cars and trucks are used in all handling operations. Prompt delivery to your door is assured.

SOLVENCY – Esso aliphatics and Solvesso aromatics cover both high and low solvency ranges.

CONTROLLED EVAPORATION—available in a wide range of evaporation rates with precise characteristics to meet your most exacting requirements.

FOR TECHNICAL ASSISTANCE – If you have a solvents problem or want further information on the specifications and characteristics of Esso Solvents—write or call our office nearest you. Our technicians will be glad to assist you.

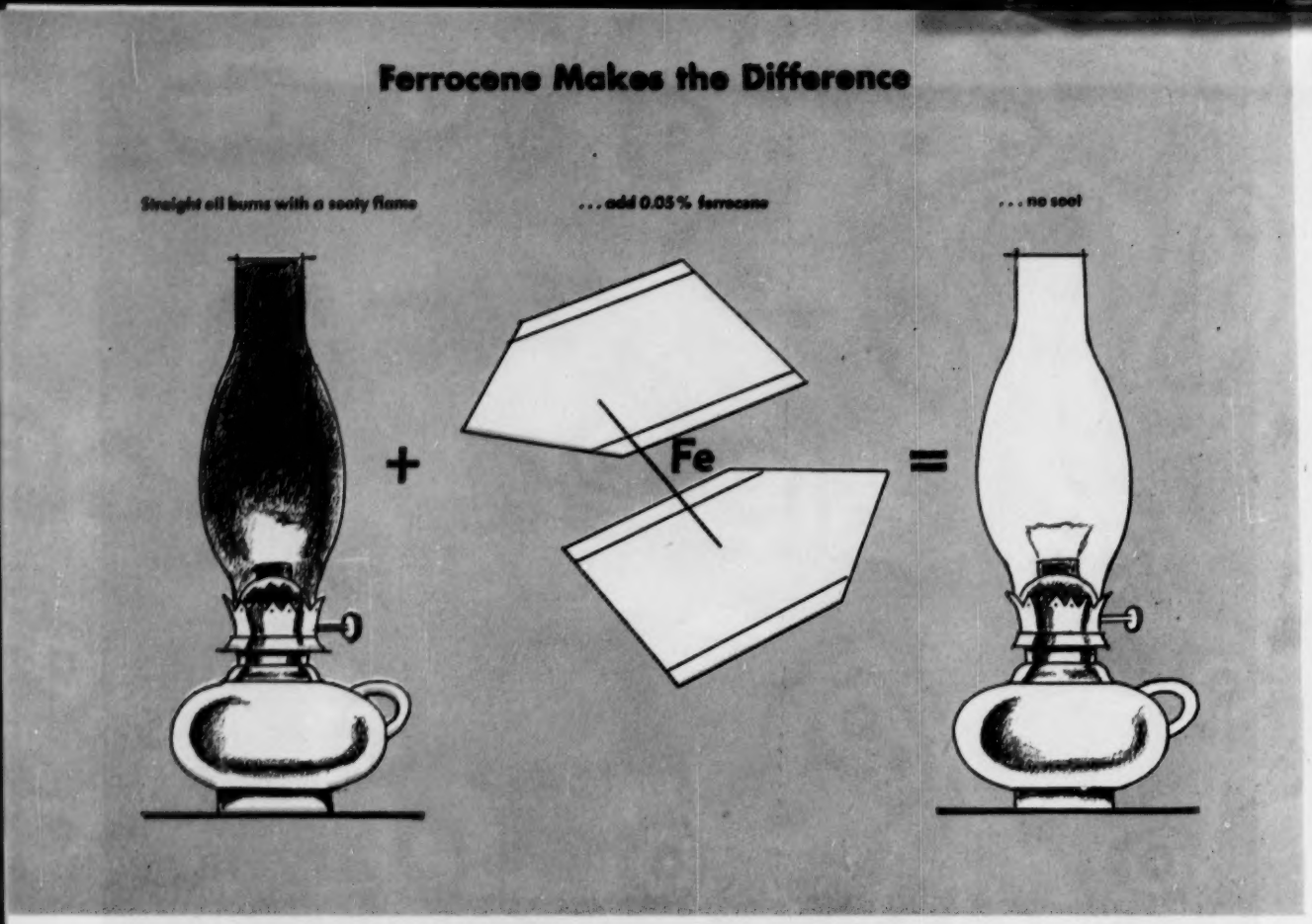
ESSO

PETROLEUM SOLVENTS

SOLD IN: Me., N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., Del., Md., D. C., Va., W. Va., N. C., S. C., Tenn., Ark., La.

ESSO STANDARD OIL COMPANY

Boston, Mass. – Pelham, N. Y. – Elizabeth, N. J. – Bala-Cynwyd, Pa. – Baltimore, Md. – Richmond, Va. – Charlotte, N. C. – Columbia, S. C. – Memphis, Tenn. – New Orleans, La.



KEROSENE LAMPS AREN'T MAKING A COMEBACK, but they illustrate why Du Pont researchers are now . . .

Seeking Profits in the Pall

Where there's smoke there's fire. But a team of Du Pont chemists are doing their level best to prove that the converse doesn't invariably follow. Their chances of success are keyed to bis (cyclopentadienyl)iron, a new chemical that is being evaluated this week by potential customers in the petroleum industry.

Commonly known as ferrocene, the novel organometallic shows a marked ability to promote virtually smokeless combustion of organic materials.

Tie this in with its high degree of solubility in hydrocarbons and you understand why Du Pont thinks the petroleum industry will be interested. Home-heating, for instance, is considered to provide a natural opportunity for ferrocene's talents.

Tests conducted at the company's Deepwater, N.J., petroleum laboratory are said to prove the value of the chemical in cleaning up oil-burner operation. In typical on-and-off household service, normally smoky gun-type burners were found to yield substantially less soot on ferrocene-containing oils. Pot burners gave smokeless operation in 12-hour runs using a heavy No. 2 oil to which a small amount of the chemical was added.

Even an old-fashioned kerosene lamp, burning a heavy oil, gave off negligible amounts of smoke in a graphic demonstration of ferrocene's talents.

More than aesthetics is involved in the results of these tests. Aside from being an eyesore and a general community nuisance, smoke and soot are symptoms of inefficient burner performance. Some of the products of this incomplete combustion go up the chimney (as smoke and soot), but unburned carbon inevitably forms on the burner jet—further reducing the efficiency of the entire process.

This problem, moreover, is expected to become more serious and widespread with the increasing hard-to-burn aromatic content of household heating oils. Du Pont feels that ferrocene can provide a constructive answer, reports that small amounts of the chemical (0.05% by weight) in heating oils were able to reduce carbon-formation on test-burner jets by 40%.

Looking for Spots: Other jobs that ferrocene may be able to handle: improving the combustion characteristics of jet aircraft fuels; and cleaning up automobile exhausts. As a matter of fact, Du Pont believes that an opportunity for the chemical exists in any smoke-generating process, is now trying to discover exactly which provide remunerative opportunities.

Working in ferrocene's favor is a high degree of stability, low toxicity (as revealed in preliminary studies), and a tendency to sublime and distribute uniformly in combustion zones. Several questions—e.g., what happens on prolonged use—remain to be answered, and cost is still an unknown quantity. But more research should

WHY WAIT TO CONVERT TO 73% CAUSTIC SODA?

Every day you delay may be costing you money

Several customers who recently changed from 50% to 73% caustic soda said they would have converted sooner but they didn't think the *savings story* applied to their operations.

Perhaps you have not analyzed recently the possible profits from converting to 73%. But don't dismiss the matter lightly, because a little figuring may disclose that you, too, are in a position to realize substantial savings.

This applies whether you are a large user or a small user, and whether you use high strength directly or dilute it. Actually, savings often apply to some customers who buy solid and flake caustic.

A combination of factors determines how great your savings will be. Location plays an important part. But it costs you nothing to find out. Our Technical Service Department will be glad to assign one of its specialists to discuss your individual case, to make recommendations and to estimate your annual savings.

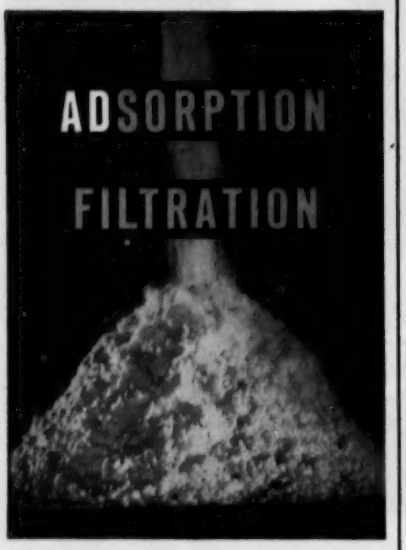
So why wait? Do it now. Write our Caustic Soda Department at the Pittsburgh office.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati
Charlotte • Chicago • Cleveland
Boston • New York • St. Louis
Minneapolis • New Orleans
Dallas • Houston • Pittsburgh
Philadelphia • San Francisco

SOLKA-FLOC®

gives you double barreled action



As a cellulosic filter-aid SOLKA-FLOC will not only improve your filtration rates, keep screens cleaner, and save down time, but will *adsorb* many metals such as iron, copper and other impurities.

Because it acts as a tenacious and selective *adsorbent*, SOLKA-FLOC is now being used by many medical and pharmaceutical laboratories for the purpose of chromatography. Manufacturers of caustic soda, industrial metals, pharmaceuticals, etc., have found SOLKA-FLOC invaluable as an *adsorbent* filter aid.

99.5% chemically pure cellulose, SOLKA-FLOC guarantees clear, pure filtrate. It can be handled readily with a knife, will not gouge . . . gives a more stable cake, will not bleed . . . gives longer life to the precoat . . . is chemically inert, easily washable . . . can be burned to recover any valuable solids remaining.

To meet your specific needs, SOLKA-FLOC offers you a wide range of grades . . . enabling you to obtain any desired combination of flow rates and efficiency of filtration.

If you have a filtration problem of any kind, write to our Technical Service Department FC-1, in Boston, describing your problem in detail.

BROWN COMPANY, Berlin, New Hampshire

General Sales Offices:
150 Causeway Street, Boston 14, Mass.

SOLKA AND CELLATE PULPS • SOLKA-FLOC • NIBROC PAPERS • NIBROC TOWELS • NIBROC KOWTOWLS NIBROC TOILET TISSUE • BERMICO SEWER PIPE AND CONDUIT • ONCO INSOLES • CHEMICALS

Story begins on p. 54

square away the former and the appearance of commercial demand for the product will take most of the uncertainty out of the latter.

Du Pont says only that cost will hinge on the size of the market that shapes up. To launch its drive for applications, the company is distributing samples in the petroleum industry, beginning to talk to oil company researchers.

Improbable Sandwich: Ferrocene production promises to pose no staggering problems. The compound is put together by a relatively straight-forward reaction of ferrous chloride and the sodium salt of cyclopentadiene, a catalytic reforming product that is widely used in finishes. Some cyclopentadiene is also available from coal-tar sources.

Result of the synthesis is a sandwich structure (*see illustration, p. 54*) that five years ago would have drawn incredulous stares from many excellent chemists. Discovered only a little more than three years ago by two Duquesne University researchers, T. Kealy and P. Pauson, bis(cyclopentadienyl)iron is a unique and—in the opinion of many—an improbable structural type.

But not only does the molecule hold together, it unexpectedly displays some of the characteristics of aromatic compounds. It will, for example, undergo Friedel-Crafts alkylation.

Du Pont became interested in the chemical in Jan. '52, very shortly after its discovery, and subsequently launched ferrocene research at the company's Jackson laboratory and experimental station. Prominent in studies carried on at the former installation are chemists Madison Hunt, Viktor Weinmayr and Fred Arimoto; John Thomas and Peter Graham, chemical department researchers, spearheaded experimental station studies. Application and development work is under way at the petroleum laboratory.

U.S. patents arising from this combined effort are 2,680,756 (to Pauson); 2,680,758 (to Thomas); 2,683,157 and 2,694,721 (to Weinmayr). All were granted last year and all are assigned to Du Pont. In part, they reflect the attempt that is being made to turn the material's unusual chemistry to profitable ends. Cases in point: included in the group are "carboxycyclopentadienyl(cyclopentadienyl)iron" (2,683,-157), and "condensation products of bis(cyclopentadienyl)iron and aldehydes" (2,694,721).

Opportunity in Knock: Ferrocene in a somewhat different light is revealed in Hercules Powder's work with the compound. Hercules and a number of other firms have shown more than passing interest in the chemical as an antiknock agent.

In a patent application filed in Australia last year, Hercules states that motor fuels containing bis(cyclopentadienyl)iron exhibit "excellent" antiknock characteristics, without suffering from "the many disadvantages of the prior art antiknock motor fuels." Hercules reports a preparation of the

DU PONT'S ARIMOTO AND WEINMAYR: They're plumbing an aliphatic anomaly.

GIRDLER DESIGNS processes and plants
GIRDLER BUILDS processing plants
GIRDLER MANUFACTURERS processing apparatus

GAS PROCESSES DIVISION:

Chemical Processing Plants	Ammonia Plants
Hydrogen Production Plants	Sulphur Plants
Hydrogen Cyanide Plants	Acetylene Plants
Hydrogen Chloride Plants	Synthesis Gas Plants
Plastics Materials Plants	Carbon Dioxide Plants
Ammonium Nitrate Plants	Gas Purification Plants

Catalysts and Activated Carbon
Fertilizer Plants

VOTATOR DIVISION: COMPLETE EDIBLE OIL PLANTS CONTINUOUS PROCESSING APPARATUS FOR...

Textile Size	Lard	Shortening
Shaving Cream	Resins	Lubricating Grease
Paraffin Wax	Soup	Bakery Ingredients
Strained Food	Margarine	Confectioneries
Salad Dressing	Chemicals	Citrus Concentrates

Paper Coating And other Products

THERMEX DIVISION: HIGH FREQUENCY DIELECTRIC HEATING EQUIPMENT APPLIED TO...

Foundry Core Baking	Rubber Drying and Curing
Wood Bonding	Plastic Preform Preheating

GIRDLER designs and builds heavy water plant for United States Government

IN 1950 the Atomic Energy Commission submitted to Girdler laboratory data on a process to produce heavy water. Girdler reviewed the existing data, bench-tested, pilot-planted, estimated, engineered, procured equipment for, and constructed an extensive, complicated, chemical processing plant at Dana, Indiana for the AEC. Upon completion of the pilot plant, AEC engaged the du Pont Company as the prime contractor and operator for the project; with Girdler continuing to carry out phases of work for engineering development, design, procurement, and construction. This vital project for our national defense became a "crash" program with greatly accelerated completion schedules. During the construction of this high-quality plant Girdler established an outstanding safety record.

Girdler's performance on this important Government project again demonstrates Girdler's ability to develop an idea through the pilot plant, engineering and construction stages into a finished large-scale production plant.

Why not take advantage of Girdler's experience and *proved performance* for *your* process expansion or modernization? We translate basic data into production plants, particularly for high-temperature, high-pressure processes, involving corrosive materials. For information call the nearest Girdler office today.

The GIRDLER Company
A DIVISION OF NATIONAL CYLINDER GAS COMPANY
LOUISVILLE 1, KENTUCKY

GAS PROCESSES DIVISION: New York, Tulsa, San Francisco
In Canada: Girdler Corporation of Canada Limited, Toronto

VOTATOR DIVISION: New York, Atlanta, Chicago, San Francisco

Zinc Oxide

USP . USP Fluffy* . Technical . Rubber Grade . Paint Grade

- Made from pure zinc metal slabs
- Uniform high quality assured
- Samples and specifications on request
- Exclusive agent for basic producer

**Meets specifications of Toilet Goods Association*

THE CHEMICAL DIVISION OF
McKESSON & ROBBINS
INCORPORATED

BOSTON • BURLINGTON • CEDAR RAPIDS • CHICAGO • CLEVELAND • DALLAS • DECATUR
DES MOINES • HOUSTON • LOS ANGELES • MOBILE • NEW YORK • OMAHA • PEORIA
PHILADELPHIA • ST. PAUL • ST. LOUIS • SAN ANTONIO • SAN DIEGO • WICHITA

Nationwide distributors of heavy and fine chemicals

OLDBURY
1896 ®

ALKYL ACID PHOSPHATES

(ALKYL PHOSPHORIC ACIDS)

Partial List • Light color to colorless

1. Methyl Acid Phosphate
2. n-Butyl Acid Phosphate
3. Amyl Acid Phosphate
4. Iso Octyl Acid Phosphate
5. Lauryl Acid Phosphate

These and other alkyl acid phosphates including mixed alkyl acid phosphates are available in quantities ranging from experimental to semi-commercial.

Technical information and samples on request.

OLDBURY
ELECTRO-CHEMICAL COMPANY

Executive Offices:
NIAGARA FALLS, NEW YORK

Sales Office:
19 RECTOR STREET, NEW YORK 6, N. Y.

Plants:
NIAGARA FALLS, N. Y. COLUMBUS, MISS.

compound by a Grignard procedure (the classic laboratory route), cites ferrocene's stability and lack of reactivity toward many substances as advantages over tetraethyllead.

A serious drawback, however, is ferrocene's tendency to decompose in engine cylinders to highly abrasive iron oxide, a characteristic the material shares with the iron carbonyls. Hercules, and others who have investigated the antiknock properties of ferrocene, is fully aware of this shortcoming and is known to be seeking ways to correct it.

In the meantime, home heaters and jet aircraft represent the unusual chemical's best short-term bets for rewarding application. In the oil burner field, ferrocene will complete with a horde of combustion improvers. But, in Du Pont's estimate, it has little to fear; the company says it is far and away the best such agent it has seen.

That could be an understandable display of proprietary enthusiasm, or the cold realistic fact. Either way, it's going to take some proving. Still in the initial stages of development, ferrocene will be keeping researchers busy for considerable time to come.

Radiation Recruit

This week, Diamond Alkali took the plunge into radiation research, revealed plans for a "hot" laboratory at its Painesville, Ohio, research center.

Expected to be ready by mid-February, the new lab will be equipped for both high- and low-level radiation emanating from a 1000-curie radioactive cobalt source (fabricated at Brookhaven National Laboratory).

Diamond researchers will use the pine-shaped source to investigate the effects of gamma rays in synthesis.

•

Needle Oil: Under way at Ontario Paper Co., Ltd. (Heron Bay, Ontario), are experiments to determine whether commercial quantities of essential oils can be obtained from spruce and balsam needles by distillation. Heading up the research is H. Borden Marshall, chief chemist in the forest products division of the Ontario Research Foundation. Laboratory studies so far, says Marshall, show that oils obtained from the needles of spruce, balsam, hemlock, or cedar are distinct chemical compounds with potential value in the synthesis of drugs and insecticides.

CROWN SPRA-TAINER: Does It Again!

New *"Four Star Quick-Strip" Pressure Unit Makes Paint Removing a Cinch

Spray it on . . . wait 10 or 15 minutes . . . clean off paint, varnish, enamel with cloth, scraper or putty knife. Quick! Easy!

That's how new convenience comes to *"Four Star Quick-Strip" customers who buy this Paint Remover Bomb, packaged in the Modern, Functional Design of pressurized SPRA-TAINER.

Helping to launch new, more effective products is something that safe, seamless SPRA-TAINER is doing every day . . . upholding its reputation as "First and Leading Lightweight, Low Cost Pressure Package."

Let the Quality, Performance and Value of famous SPRA-TAINER lead you to Crown's Complete Line when choosing cans for any purpose.

*Distributed by:
THE CANADA PAINT CO. LTD.
THE LOWE BROTHERS CO. LTD.
THE MARTIN-SENOUR CO. LTD.
THE SHERWIN-WILLIAMS CO. LTD.
of CANADA.

CROWN

One of America's Largest Can Manufacturers

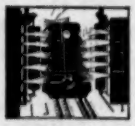
CROWN CORK & SEAL COMPANY, INC.
CROWN CAN DIVISION

PHILADELPHIA • CHICAGO • ORLANDO • BALTIMORE • NEW YORK • BOSTON • ST. LOUIS • SAN FRANCISCO

good ideas have no "office hours'

Here are examples of Pfizer chemicals that are helping industry produce better product

Pfizer Ammonium Citrate makes domestic and industrial metal cleaners safe, fast, effective. It's odorless, hence pleasant to use... has just the right degree of acidity for rapid rust removal from iron and steel without harm to uncorroded surfaces. This derivative of citric acid is a solid and mixes well with other dry ingredients in powdered preparations. Write for Technical Bulletin 15.



Pfizer Oxalic Acid helps simplify the mai tenance of railroad cars and locomotive Equipment is washed quicker and easie when sprayed with liquid solutions contai ing Oxalic. This strong organic acid solubilizes iron oxi speedily eliminating rust, grime and dirt. It also plays key role in products for cleaning auto radiators, chr mium, steel, marble, etc. Write for Technical Bulletin 3

The choice and use of industrial chemicals calls for thoughtful consideratio

That's why your Pfizer sales representative really lives with your problems

Good ideas don't come easily. Especially when you're wrestling with such problems as *how to boost production...cut costs...increase product sales appeal...create new products.* This requires more than a little solid thinking and "midnight oil burning." Isn't it a wise step, then, to have the trained, experienced mind of a good salesman working on your problems, too? Your Pfizer sales representative welcomes this challenge. Why? Because his success is directly related to helping achieve your successes. And to back him up and stimulate his thinking he has the Pfizer Technical Service Department and all the vast experience Pfizer has gained in working with industry for more than a century. Why not put this thinking and experience to work for you?

increase sales appeal, or reduce maintenance expense.

Better cellulosic and vinyl products are often possible when a Pfizer Citric Acid Ester is used as the plasticizer. They are extremely low in toxicity...a boon to food packaging, beverage tubing, hospital sheeting and apparel that contacts the skin. Citrate plasticizers may make possible easier processing and improved light fastness for many products. Write for Technical Bulletin 31.

CHAS. PFIZER & CO., INC.
CHEMICAL SALES DIVISION
630 Flushing Ave., Brooklyn 6, N. Y.
Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.

Pfizer *Manufacturing Chemists for Over 100 Years*

Talk it over with your Pfizer sales representative. He'll be glad to assist you.

PURCHASING SYLLABUS: Training committee† checks plans before recruits take orientation with Vice-Pres. Moody.

Cyanamid Backstops Buying Line

One purchasing dollar saved equals four sales-profit dollars earned. That's behind Cyanamid's comprehensive agent training program.

College recruits are turned into purchasing agents through an 18-month, four-pronged course providing background, know-how, and practical experience.

About a year from now, a salesman making the rounds of American Cyanamid's purchasing offices may be in for a big surprise. Alongside the familiar, well-seasoned purchasing agent he'll likely find a bright young newcomer with the ink hardly dry on his diploma.

But more than that, he's sure to be even more impressed by what the fledgling buyer knows. Thoroughly familiar with the company and its policies, he'll know: the particular problems of his division; the quality and quantity of what's needed; when it's to be delivered; and from whom he'll purchase it. Too, the salesman's likely to discover this same young newcomer has a fair amount of negotiation know-how and a good concept of what contracts are all about.

The qualities developed in this model purchasing agent will have come by design, not by accident. For these qualities are just what Cyanamid is seeking to instill in the products of its new, just blueprinted training course for purchasing agents. Believed to be the first comprehensive program of its kind for the chemical industry, it runs 18 months. Now educating four college recruits, tentative plans call for an additional six to eight to begin processing in June.

The program is calculated primarily to fill Cyanamid's specific needs, but it's also another step in the recognition of purchasing's mounting importance. With companies spending upwards of 52.4% of receipts for goods and services,* there's a growing awareness that purchasing can be a profitable activity. (One industry leader estimates that a 5% saving on purchases produces as much profit as a 20% hike in sales.) It's small wonder, then, that purchasing is more and more being represented in top-level management.

Like many another company, Cyanamid finds that purchasing takes thorough technical grounding plus much know-how. And men college-trained for purchasing are extremely scarce. (Only Illinois Tech. has a degree program.)

As Robert Pursell, training program head, explains, the company faced this pressing PA situation:

- Reorganization of the purchasing department created several new positions.
- About 25% of the professional purchasing staff of 130 are over 50 years old; some 13 are due to retire in one to five years. (Mandatory retirement age: 65.)
- Some present staff members deficient in a few areas of purchasing technique could well profit from parts of a complete program.

Recognizing the problem's gravity, Purchasing Director Harold La Rowe called a conference. Result: a committee was appointed to develop a training program.

Because of the company's experience with a well-developed purchasing department, the committee knew the qualities the trainee should have when he completed the course, but it had to decide, chiefly, the amount of company background needed in the course, and to a lesser extent what subjects to include.

Meetings were held, the pros and cons of plant and lab training and its length were aired, companies with established training programs were consulted. More conferences. Then, the underlying philosophy emerged. The principles of the program:

- Comprehensive background. Not only must a PA have technical understanding of the products he buys but also he must be intimately familiar

*Average figure reported by a recent survey of the National City Bank of New York. Cyanamid's expenditures are close to it.

† L. to r., Norman Sims, Frank Drucker, Harold LaRowe (director of purchases), Robert Pursell, Paul Saurwien.

if it's quality –

and uniformity you want...

You're on the **RIGHT TRACK** *with the* **BIG 4**

from **TRONA**

The "big four" from Trona — POTASH, BORAX, SODA ASH and SALT CAKE — puts you on the right track toward achieving quality and uniformity in your production. On the farm, Trona® POTASH added to the soil as a plant nutrient, results in richer, bigger harvests of every important crop. In the factory, Three Elephant® BORAX and Trona® SODA ASH are vital to strength, color, beauty and economical manufacture in glassware and ceramics; Trona® SALT CAKE is a necessity for quality-grade kraft paper. For these basic chemicals American Potash and Chemical Corporation has no equal as a diversified and dependable source of supply.

American Potash & Chemical Corporation

TRONA
INDUSTRIAL AND AGRICULTURAL CHEMICALS

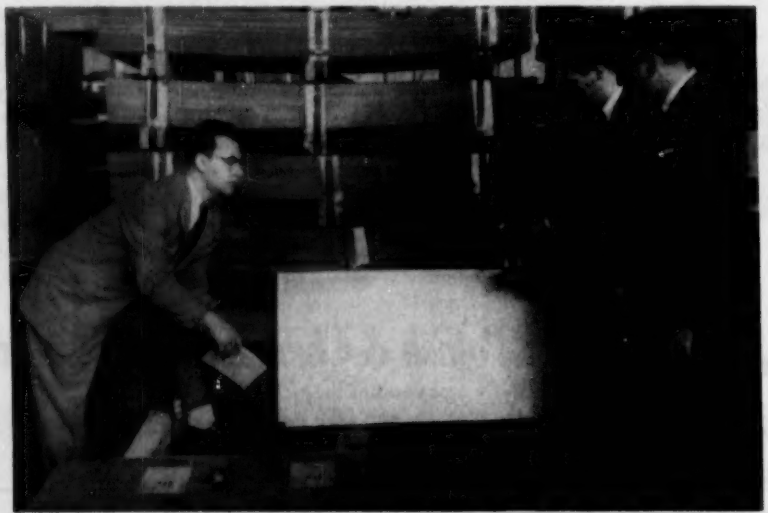
Offices • 3030 West Sixth Street, Los Angeles 54, California
• 122 East 42nd Street, New York 17, New York
• 214 Walton Building, Atlanta 3, Georgia
Plants • Trona and Los Angeles, California

• BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM & BROMINE CHEMICALS
and a diversified line of specialized AGRICULTURAL, REFRIGERANT and INDUSTRIAL CHEMICALS

TRAINEE PROGRESS: Development lessons at Stamford . . . discussions of equipment fine points under PA guidance . . .

Story begins on p. 62

. . . plant requirements review at Bound Brook—all highlights in company training.



SOURCE CHECKING: Recruits inspect drum stock of supplier Rheem Mfg. Co.

with departmental policy, individual divisional problems, interdepartmental relations, specifications, and supplier limitations. And he must acquire negotiation skill, foresight into potential difficulties, know-how in handling people. This can be learned only through a complete grounding in all company operations.

• Communiciations. Dealing with people as much as with things, the PA must be adept at expressing himself, getting others to express themselves. This speeds up and improves cooperation. Thus the program stresses communications.

• Flexibility. Generally, the course is individually oriented, trains a man for an initial specific location, though it's possible he may later buy for other sections. The program must be adaptable to nonchemical purchasers. Too, some present staff members will take only part of the course. Schooling is, thus, flexible enough to encompass all those aims.

• Practicability. The training covers basic purchasing principles as well as the "how-to-do-it" approach.

• Youth. Men selected are college recruits, some with a few years' industry experience. This gives the company maximum "time-return" on its investment.

Based on these fundamental tenets, the four-phase course consists of orientation, specific-area training, plant visitation, and on-the-job schooling:

Orientation: Taken by all new professional employees, it scans Cyana-

Louisville Method

Louisville Dryer "Family" boosts production, cuts costs for chemical manufacturer

Dryer Types Installed
in one Plant Since 1933

10 ft. x 100 ft. size
largest ever built!

Pilot Dryer
38 in. x 25 ft. size

Some years ago a large chemical company bought the smallest commercial Louisville Steam Tube Dryer as a pilot plant for a new product. Today this firm owns a whole "family" of Louisville Dryers, ranging from their original small pilot plant to the largest steam tube dryers ever built, Louisville's 10 ft. x 100 ft. rotary dryers.

Large or small, there's a *right* size dryer for your job. Louisville relieves you of guesswork about dryer size, type or construction. Our engineers survey your problem . . . their recommendations are job-tested in our pilot plant. Your Louisville Dryer is *built*—not assembled—and built right for your job. Its performance is backed by over 50 years of successful drying experience.

Ask one of our drying specialists to look over your problems. No obligation, of course.

PROCESS EQUIPMENT DIVISION GENERAL AMERICAN TRADE MARK

LOUISVILLE DRYING MACHINERY UNIT

GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer Sales Offices: 139 So. Fourth Street, Louisville 2, Kentucky • 380 Madison Ave., New York 17, New York
General Offices: 135 So. LaSalle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario
OFFICES IN ALL PRINCIPAL CITIES

sharpen up a pencil ...and figure your savings

Costs for batch mixing and inter-plant handling are reduced in plant after plant when hard-to-clean containers are replaced by Hackney *Stainless Steel* Containers. That's because the Hackney advantages—swift and easy cleaning, seamless bottom head, protection against product contamination, long useful life—often result in a *lower cost per use*—when compared with present costs for other types of containers.

Available in standard sizes of 20, 30, 50 and 55 gallons. Or write for information on other sizes.

EASILY CLEANED—smooth bottom chime has no cracks

Hackney

Pressed Steel Tank Company

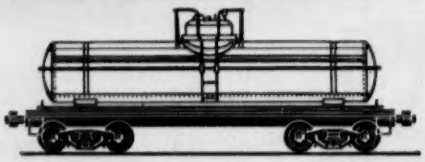
Manufacturer of Hackney Products

1448 South 66th Street, Milwaukee 14, Wisconsin

Downingtown Iron Works, Inc., Division
142 Wallace Ave., Downingtown, Pennsylvania

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

Now available in tank cars...



ACETONITRILE $CH_3C{\equiv}N$

VERSATILE SOLVENT for coatings . . . synthetic fibers . . . fats and oils processing.

REACTIVE INTERMEDIATE for pharmaceuticals and other chemicals.

On hydrolysis acetonitrile yields acetic acid. Internally, the quantitative toxicity of acetonitrile is comparable to acetic acid. Externally, it is no more irritating than acetone. For detailed information on solvent properties and chemical reactivity, call or write the nearest of CARBIDE's 23 offices.

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of
Union Carbide and Carbon Corporation

UCC

30 E. 42nd St., New York 17, N. Y. Offices in Principal Cities
In Canada: Union Carbide Canada Limited, Toronto

mid's entire operation in six weeks, by means of plant visit and lecture.

Specific-Area Training: After orientation, the PA rookie spends six weeks at Cyanamid's Stamford, Conn., research labs. Here, he's assigned to a chemical engineering or development project, does actual chemical work with new compounds and products. The fledgling gains knowledge of the type of chemicals and products the company is basically interested in, of the raw materials needed to synthesize them—all important for background.

Researching completed, the next stop for the trainee is the plant of his probable assignment. Length of stay —13 weeks. Under the supervision of the plant's training director, the recruit examines storage facilities, learns about supply and inventory problems, observes how and why specifications are set. In production and maintenance, he gets acquainted with materials, reasons for fast procurement, learns how and by whom orders are prepared. Time is given to virtually every plant activity.

Of the 13 weeks, 6 are allotted to the plant's industrial engineering section. This serves these purposes:

- It affords opportunity to study how plant functions are integrated.
- "Job sampling" (time study) teaches what each job does (Example: recruits investigate problems of scheduling.)
- Training is provided in thinking of efficient ways of doing things, saving money, and cost cutting. Pursell deems its value "as important as anything in the program."

And while the trainee gathers background, he also works at communications. Meeting people every day, he learns to know them on an informal basis. This informal basis means a lot, Pursell asserts, "when it comes to getting things done."

Plant Visitation: For the next 16 weeks, trainees are on the road, spending two days to two weeks in plants of the firm's other divisions. Emphasis falls on communications —becoming acquainted with each plant's purchasing personnel, learning what inventory and storage considerations exist, how problems are handled. The visit's also useful in exchanging ideas. And there's some gain in flexibility; apprentices broaden their approach to problems, will have

DAVISON BULLETIN

LIGHT AS A FEATHER SYLOID® 244

Syloid 244 is a highly porous pure silica gel of extremely low density. A free-flowing white powder, it appears as a fluffy snow weighing 4-4.5 pounds per cubic foot as shipped. Syloid 244 has an apparent particle size of 2-3 microns, yet individual particles are predominantly below one micron.

The chemical and physical characteristics of Syloid 244 makes it adaptable for many uses including the following:

- anti-blocking of clear plastic film
- an additive to inks for quick-drying
- a vinyl flatting agent
- anti-caking for powdered products
- thickening agent for salves, lubricants and plastigels

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.

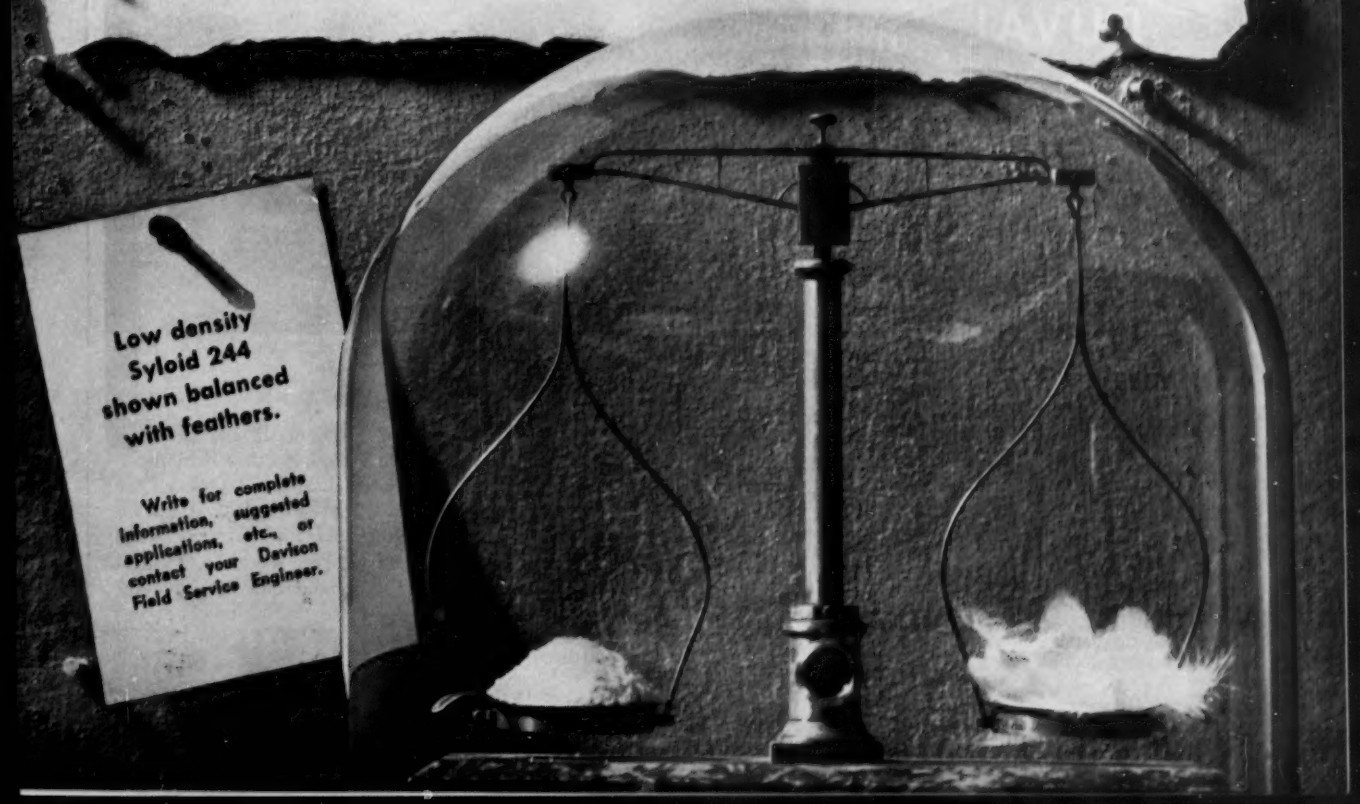
TYPICAL CHEMICAL AND PHYSICAL CHARACTERISTICS OF SYLOID 244

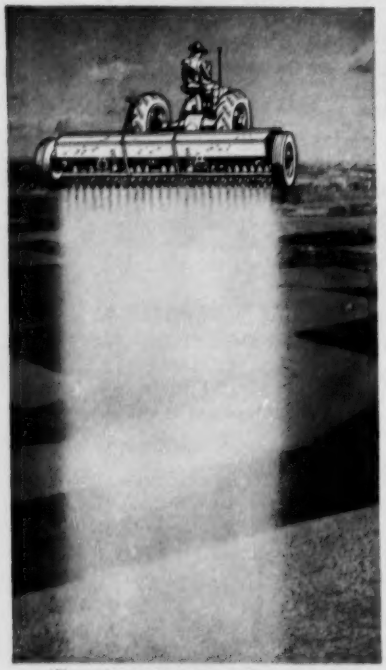
Color	white, 94 Hunter reflectometer transparent in vehicles
Appearance	uniform, free-flowing powder
Density	
as shipped	4-4.5 lbs./cu. ft.
centrifuged in toluol	7.5 lbs./cu. ft.
true (specific gravity)	2.1-2.2
pH	7.2
Silica as SiO_2 (dry basis)	99.5%
Oil adsorption	240 lbs. oil/100 lbs. SiO_2
Surface area (nitrogen)	292 M_2/gram

PARTICLE SIZE DISTRIBUTION BY WEIGHT

(water sedimentation)

5% less than	1.1 microns
10	1.4
20	2.0
40	3.0
50	3.7
60	4.5
80	7.0


Low density Syloid 244 shown balanced with feathers.
Write for complete information, suggested applications, etc., or contact your Davison Field Service Engineer.



(Photo—Courtesy Soil Conservation Service, U.S.D.A.)

HIGH GRADE MURIATE OF POTASH

BY DUVAL

Duval Muriate of Potash ranks high as one of the essential nutrients which greatly increase yield and profits in crop production.

DUVAL SULPHUR and POTASH CO.
Modern Plant and Refinery at Carlsbad, N. M.

Address all communications to:

ASHCRAFT-WILKINSON CO.
Exclusive Distributors

ATLANTA, GEORGIA
Cable Address: Ashcraft

NORFOLK, VA.
CHARLESTON, S. C.
TAMPA, FLA.
JACKSON, MISS.
COLUMBUS, OHIO
DES MOINES, IOWA

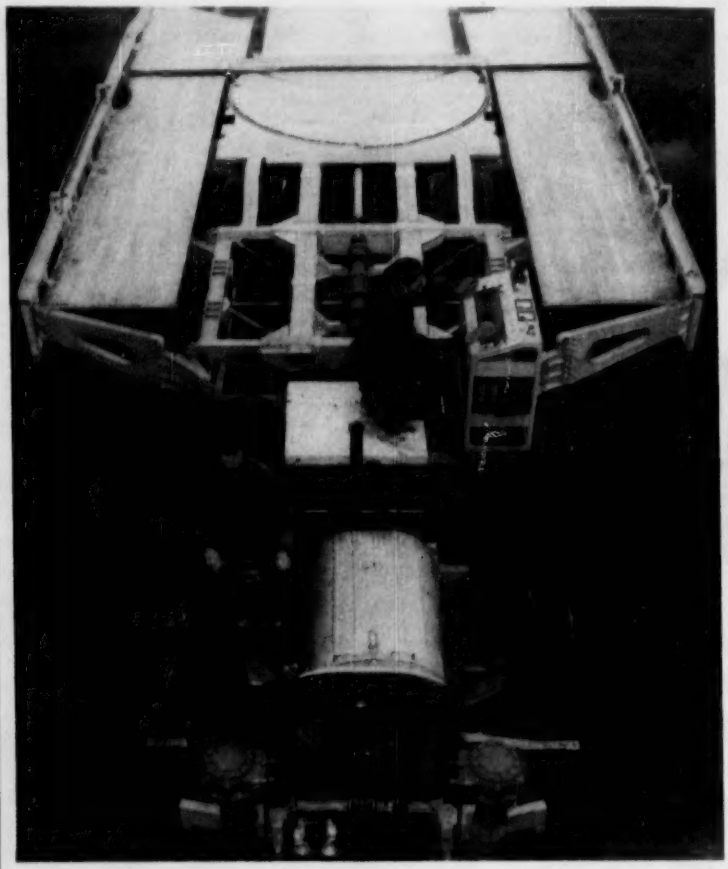
some knowledge of the plant in event of possible assignment there.

On-the-Job Schooling: Now steeped in background lore, the candidate enters the longest and final phase. Under the guidance of a senior PA, Cyanamid's trainees assume actual purchasing duties for 38 weeks.

They inspect vendors' plants, help adjust specifications to market availability, assist in source selection and evaluation, study price and supply variations, take part in negotiations.

One day a week the students journey to Cyanamid's central purchasing offices in New York to attend seminars conducted by Pursell and company specialists on various purchasing aspects. Seminars are split into three categories:

- Purchasing department: The subject matter of this group is allotted chiefly to departmental organization and function, basic policies, procedures and forms, and individual staff tasks. Time: four weeks.



Like the Arabs

DESIGNED with fold-up base and folding walls, this new bus is now being built in Italy. To be used by agricultural agencies and manufacturers in touring the countryside to lecture on new methods and advertise new equipment, the bus will carry a film projector and screen, a chemical laboratory, a technical library, other demonstration aids. On the highway, the sides of the bus will fold up for traveling; on location, the walls will be spread, fencelike, to provide accommodation for an audience of 100.

Dependable Source for Chemical Raw Materials

J. Riccardi, President, Roman Cleanser Co., Detroit, Michigan.

"Wyandotte Caustic is particularly well suited to making a better bleach"

—J. Riccardi, President, Roman Cleanser Co.

"There is no secret in making a bleach that is stable, effective, and easy on the clothes and hands," states J. Riccardi, President, Roman Cleanser Company, Detroit, Michigan, a pioneer maker of household bleaches. "It starts with a pure Caustic which must not be contaminated with iron, and requires proper equipment and careful handling right through to the consumer.

"Wyandotte Caustic is particularly well suited to making a better bleach," states Mr. Riccardi whose experience dates back to 1919. "It's never over 3 or 4 parts per million iron. Once it gets to our plant, we see that nothing but pure rubber, plastic, or glass ever comes in contact with it.

"From our experience, we know that our Caustic from Wyandotte will always meet our requirements. The same holds true for the Chlorine we purchase from them. We know, too, that should we ever run into any difficulties, Wyandotte technical service is always as close as our telephone, ready to help us out. With this combination, our customers are always assured of getting the finest bleach money can buy."

Are you working with a supplier that controls quality with your products in mind? Are you getting the kind of technical assistance that is both prompt and practical? Wyandotte offers you quality-controlled chemical raw materials, and helpful technical assistance in putting them to work advantageously for you. May we serve you? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte
CHEMICALS

HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Calcium Carbonate • Calcium Chloride • Glycols • Synthetic Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals

A New Light on Stearic Acid

Candles burn cleaner when made with a Stearic Acid of low ash content. Century Brand Stearic has the lowest ash content of any on the market today. Careful selection of raw materials and care in processing make Century Brand Stearic Acid the best for candles.

Stearic Acid Esters are whiter when made with Century Brand Stearic Acids because of their exceptional heat stability. Glycerol Monostearates with colors of 5 Yellow and 1.0 Red (5¼" Lovibond) have been produced with Century 1220 Double Pressed Stearic Acid without bleaching.

Cosmetic creams and lotions stay lighter when made with Century Brand Supra Grade Stearic Acid. An iodine value of less than 1 combined with excellent stability make Century the top Stearic Acid for cosmetics.

For these and other uses there is a grade of Century Brand Stearic Acid to meet your requirements.

W. C. HARDESTY CO., Inc.

Century Stearic Acid Products, Inc.

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY
PLANT: DOVER, OHIO
In Canada: W. C. Hardesty Co. of Canada Ltd., Toronto

what's your PROBLEM

If it's locating suppliers of chemicals and process equipment, or chasing down tradenames or application data, the solution's simple.

Turn to your CHEMICAL WEEK BUYERS' GUIDE—its 850-plus pages are chock-full of authoritative information to make your purchasing job easier. No need for headaches or extra file cabinets—when your BUYERS' GUIDE is ready to go to work for you today and every day.

CHEMICAL WEEK BUYERS' GUIDE

McGraw-Hill Publishing Co.
330 West 42nd Street,
New York 36, N. Y.

SALES REPRESENTATION IN BRITAIN

The time may soon come when you will require first-class representatives in Great Britain, who can take full advantage of an easing Dollar situation to introduce your Chemical and Pharmaceutical products. Such an organisation must be both long established (our Parent Company was founded in 1797) and progressive, combining intimate knowledge of the market with imagination and drive. This is why we suggest you contact us.

G I

a Harris & Dixon company

GUEST INDUSTRIALS LTD

Raw Materials Division

81 Gracechurch St., London, E.C.3.

DISTRIBUTION. . . .

• Interdepartmental integration. Since purchasing works with virtually all segments of a chemical business, these seminars examine Purchasing's relationship to 10 other departments, including sales, production planning, research, and inventory control. In sales, for example, attention focuses on acquiring raw materials proportionate to sales, and relaying data on market trends, shortages, raw material prices—all of which can affect pricing. Time: 10 weeks.

• Purchasing problems. This phase consumes the most time—24 weeks. Here, trainees tackle problems from case histories. Solutions are then presented at the following seminar. Lectures cover eight areas, encompass source selection, "right quantity and quality," best buying time, negotiation, and contracts.

Hardest thing to teach, according to Pursell, is negotiation. Ethics and finesse can be learned only through long experience. But the course does cover what questions a PA may ask a salesman, what data he can divulge, what preparation he'll have to do (half the job, avers Pursell). He'll learn, too, the proper approach to take on nonperformance of contract, to have a lawyer "in" on such cases.

By means of the problem section, Cyanamid believes the recruit will learn to evaluate facts and make decisions on problems more complex than those in his usual daily work.

Progress Checks: Throughout the entire program, the company charts its trainees' progress two ways: immediate superiors file periodic reports (every 6 weeks) and the recruits themselves prepare confidential written reports on every section of their training. Bonus management benefit: Cyanamid gains insight into "what's going on."

Once the seminars wind up, the trainee is assigned to a specific buying location and he's on his own. In anywhere from 4 to 10 years, he'll pick up the skills that only experience can teach, mature into a full-fledged purchasing agent.

With the program as pioneering as it is, Cyanamid doesn't expect to know all the answers the first time. Revisions, of course, will be made (plant visits may intersperse on-job schooling). But the framework establishing a constant supply of thoroughly trained buyers is up.

PERKIN-ELMER

PROCESS ECONOMICS

How modern methods of ANALYTICAL CONTROL can increase profits through improved process efficiency

Ammonia Ammonia throughput can be increased by 10 percent - with TRI-NON* Analyzers. Maximum caustic utilization plus extension of catalyst life can result in savings of $16,000 per year on a throughput of 250 tons per day. Let Perkin-Elmer engineers show you how ANALYTICAL CONTROL can yield important savings in your process.

Cosmetics Purity-checks on incoming raw materials by infrared analysis showed one cosmetics manufacturer that he was paying $5 per pound for a raw material diluted 3 to 1 with a $.50 per pound adulterant. Conventional analyses could not easily detect any difference - infrared spotted the adulteration in a few minutes. Perkin-Elmer can help you set up dollar saving raw material control procedures in your plant.

Hydrocarbons Operating profit in light hydrocarbon separations depends on both product purity and percent recovery. Continuous analytical control of the fractionation tower results in an increase in recovery while product purity is maintained. Such an increase is possible because a continuous knowledge of stream composition permits optimum setting of the process variables at all times. Perkin-Elmer engineers can show how ANALYTICAL CONTROL will increase your yields and process efficiency.

* TM The Perkin-Elmer Corporation

In chemical processing—Control Begins with Analysis. ANALYTICAL CONTROL means lower operating costs and higher profits. Perkin-Elmer can show you how your plant can benefit from improved ANALYTICAL CONTROL in your control laboratory or on the process stream itself.

THE PERKIN-ELMER CORPORATION 820 Main Avenue, Norwalk, Connecticut

I am interested in learning how ANALYTICAL CONTROL instruments may be applied to the following processing problem: _____

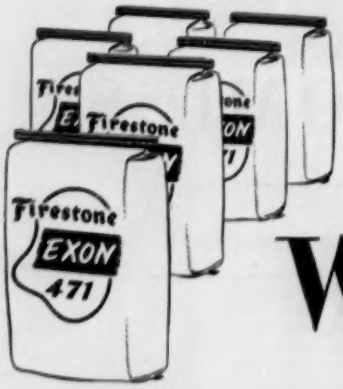
_____

Please send me information on your ☐ laboratory, ☐ Process stream instruments.
☐ Please have a Perkin-Elmer engineer call on me.

NAME _____ TITLE _____

COMPANY _____ ADDRESS _____

EXON: a specific remedy for each specific problem



EXON 471

specifically for

weatherability

Unmatched for outdoor durability by other vinyl solution resins, EXON 471 assures protective coatings with superior weathering and aging qualities—*plus* chemical resistance.

After a full year of outdoor exposure, a coating of EXON 471 clear glossy film revealed no measurable change. Other vinyl copolymer coatings similarly exposed deteriorated in 3 months.

Under sun lamp exposure for 360 hours as a one mil film, EXON 471 showed no noticeable change!

2-hour bakings in a 180-degree forced-air oven left no sign of yellowing on a film of EXON 471!

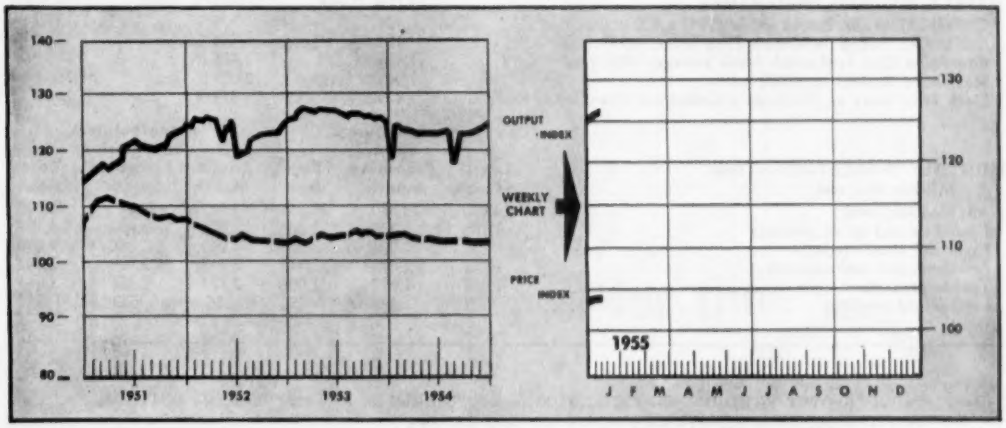
Proven durability and adhesion to wash primers make EXON 471 the ideal resin for better protection and longer life in a topcoat.

Whatever your particular problem, you're likely to find the specific remedy in one of the many versatile EXON resins.

For complete information or technical service on the entire line of EXON *resins, call or write today.*

Firestone
EXON

CHEMICAL SALES DIVISION
FIRESTONE PLASTICS COMPANY, POTTSTOWN, PA., DEPT. 4J
DIVISION OF FIRESTONE TIRE & RUBBER CO.



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

Consumers of nickel derivatives are feeling another pinch traceable to the metal's scarcity *(CW Market Letter, Dec. 4, '54)*. Major salts producers are cutting January deliveries.

The latest move follows the recent hikes in some nickel oxides. Black and green oxides, for example, are now up 7¢/lb., with drum quantity quotes on the former pegged at 76¢, on the green at 75¢/lb.

Nickel shipments, of course, are still being made on a producers' allocation basis, but despite the current tightening, and fears of further advances, it's a pretty safe bet that nickel tags will remain firm at the U.S. 64½¢/lb.-price—at least through the next half year or so.

The reason ties in with supply and demand. Though the government's stockpile buying will likely continue at today's whippet pace, cutbacks for military and other defense purposes will channel more of the metal to chemical customers later this year.

•

Many, but not all, users of general-purpose polystyrene are able to buy the crystal material at a lower 29½¢/lb. That's a full 1¢/lb. cut in prices that were posted early last week by major makers Bakelite, Monsanto and Koppers.

The other big firm in the field, Dow Chemical (as well as a few smaller polystyrene sellers), haven't as yet started writing new invoices, see no cogent reason for a price decline at this time. Competitive forces, though—not only among hard-pushing producers, but also among different plastics materials—may, before the week is out, prove to be potent price-levelers.

•

About as stable as they can be. That, generally, is the trade consensus on sulfuric acid prices. Demand, too, is described as being normal at the moment, but a jogged interest from a number of consuming industries is expected to step up sulfuric movement. Inquiry from fertilizer makers preparing for upcoming spring business has improved already.

Slated to take greater quantities of the acid are steel, petroleum refiners, rayon makers, and chemical producers now barreling along under a brisk fourth-quarter impetus. Sulfuric marketers aren't showing any

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	126.5	126.3	124.2
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.4	104.5	105.0
Bituminous Coal Production (daily average, 1000 tons)	1,418.0	1,486.0	1,365.0
Steel Ingot Production (1000 tons)	1,989.0 (est.)	2,007.0 (act.)	1,766.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	373.8	373.9	264.3

MONTHLY INDICATORS—Trade (Million Dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	24,596	23,337	24,256	43,811	43,841	46,909
Chemicals and allied products	1,786	1,710	1,606	3,074	3,080	3,107
Paper and allied products	715	735	709	1,049	1,050	1,050
Petroleum and coal products	2,253	2,075	2,113	2,713	2,763	2,747
Textile products	1,048	1,017	1,006	2,377	2,356	2,543
Leather and products	334	320	251	586	573	570

concern over supplies, though; stocks are plentiful to take care of current and foreseeable requirements of all customers.

•

The same can be said for sulfur. Demand has picked up over the past few months in line with the uptrend in most other industries. As with sulfuric acid, there's more than enough sulfur available to satisfy customers' needs.

Ample supply is probably the prime price line-holder. Contract sulfur tags are being extended into 1955 without change. Crude is pegged (on contract) at $26.50/ton, c.l. mines; while export quotations continue to range from $31 to $33/ton, (f.o.b. vessels, Gulf ports). To Canada it's $28 to $29.50/ton, (same basis)—the same, too, as last year.

•

The tail end of '54 racked up some primary aluminum production records. More aluminum was turned out in the U. S. during December than in any other month in history—some 254,113,000 lbs. The Aluminum Assn. also reports that the fourth quarter production, 746,795,795 lbs., turned out to be an all-time high. Total for last year hit a near-3 billion lbs. compared with the previous year's 2.5 billion.

The increase in output, however, has apparently boosted production costs. At any rate, observers are inclined to justify last week's hikes in pig and ingot prices by pointing to just such rising costs. Early next month some consumers will be paying 1¢/lb. more for both aluminum ingots and pigs. The former will be pegged at 23½¢/lb. (10,000-lb. lots, delivered); the pigs at 21½¢/lb., same basis.

•

On the other hand, carnauba wax is lower this week. Coupled with a spotty demand, heavy imports were enough to weaken prices on some grades as much as 4¢/lb. Spot lots of Japan wax is also off, with some sales going at 1¢/lb. less than the previous level.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 17, 1955

	Change	New Price		Change	New Price
UP					
Aluminum, metal, 99%+, ingots, 10,000-lb. lots, dlvd.	$ .01	$ .235	pigs, 10,000-lb. lots, dlvd.	.01	.215
			Lemongrass oil, cans, dms.	.15	2.65
DOWN					
Carnauba wax, No. 3 Ceara, crude, bgs., ton lots	$ .04	$ .66	refined, tech., bgs., ton lots	.02	.70
			Polystyrene, general purpose, crystal	.01	.295

All prices per pound unless quantity is stated.

ASK DU PONT

for the

intermediate

you need

No other chemical company offers such a wide variety

You can count on Du Pont to supply a wide choice of intermediates for your needs. A complete line of aromatic compounds is available —including chloroanilines, and naphthalene and toluene derivatives. Du Pont offers the widest variety of intermediates of any chemical company and our technical men are always ready to help you in their application.

WRITE US TODAY on company letterhead for additional information about intermediates and technical services available. Du Pont Company, Organic Chemicals Department, Chemicals Div., Wilmington 98, Delaware.

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

ORGANIC CHEMICALS DEPARTMENT

HARSHAW FLUORIDES

work capably and efficiently for many industries

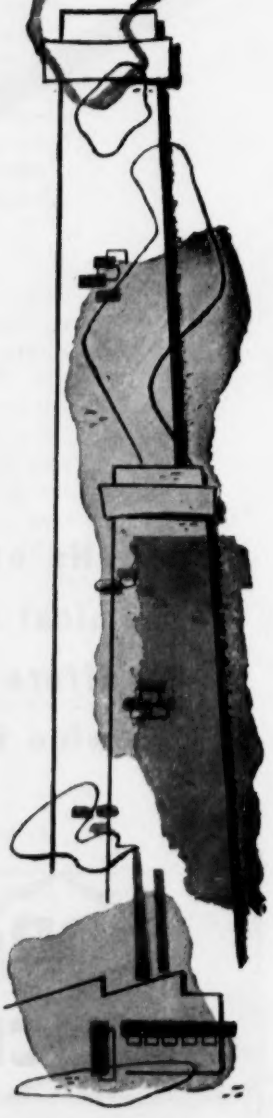
Here is a comprehensive group

- Ammonium Bifluoride
- Ammonium Fluoborate
- Antimony Trifluoride Sublimed
- Barium Fluoride
- Bismuth Fluoride
- Boron Trifluoride
- Boron Trifluoride Complexes
- Chromium Fluoride
- Fluoboric Acid
- Fluorine Cells
- Fluorinating Agents
- Frosting Mixtures
- Hydrofluoric Acid Anhydrous
- Hydrofluoric Acid Aqueous
- Hydrofluosilicic Acid
- Potassium Bifluoride
- Potassium Chromium Fluoride
- Potassium Fluoborate
- Potassium Fluoride
- Potassium Titanium Fluoride
- Silico Fluorides
- Sodium Fluoborate
- Zinc Fluoride

THE HARSHAW CHEMICAL CO.

1945 EAST 97th STREET • CLEVELAND 6, OHIO

Just write for this 40-page Harshaw Book on Hydrofluoric Acid Anhydrous. It has been written to provide helpful data for you if you now use HF or are considering its use.



U.S. output of SILICOFLUORIDES in '55 may hit . . . 49.5 million lbs.*

It breaks down like this: (in millions of lbs.)

- **Sodium** 36.0
- **Potassium** 4.5
- **Zinc** 4.0
- **Ammonium** 3.5
- **Magnesium** 1.5

*CW estimates

Ground Swell in Silicos

Swelling demand for potassium silicofluoride will soon edge output into undisputed second place ranking next to sodium salt, long the major silicofluoride offspring* (see chart). Although production goals are kept secret, it's likely that makers of potassium silicofluoride will turn out 4.5 million lbs. and perhaps more this year. Bolstering this turnout is Tennessee Corp.'s U.S. Phosphoric Products Division, just now swinging into production of potassium silicofluoride at its Tampa, Fla., plant. This new supply of the potassium salt will add to that already stemming from Smith-Douglass (Norfolk, Va., and Streator, Ill.), American Agricultural Chemicals (several plants), and Davison Chemical (Curtis Bay, Baltimore).

Switch in Frits: Principal underprop to the current step-up of output is a steady switch, over the past year or two, from the sodium to the potassium salt in the manufacture of vitreous enamel frits. Some frits makers have made substantial savings in production costs by substituting the potassium salt. Reason: the faster melting rate of the potassium over the sodium silicofluoride is said to save fuel, promote better mixing of batch ingredients. Then, according to one frits expert, something like 10% less by weight of the potassium salt does a comparable job in vitreous enamel.

In white cover coat enamel frits the total amount of silicofluorides may vary from 5 to 7%, but in ground coats that amount is cut to 3-6%. Practically all these frits go to home appliance makers for stoves, refrigerators, freezers, etc. Moreover, some durable appliance manufacturers make their own enamel frits.

A brand-new, but admittedly small, use of potassium silicofluoride will have the wraps removed in the next week or two by the Mycalex Corp. of America (Clifton, N.J.). Production of synthetic mica gets under way in which the potassium salt will be the source of both potassium and sodium-free fluorine.

About 0.2 lb. of potassium silicofluoride will be required per pound of mica manufactured. All told, however, the mica output will not likely exceed 1000 tons/year for at least three years. The word is that the other major producer of a similar synthetic mica, Brush Beryllium (Cleveland, O.), will probably use by-product magnesium fluoride instead of purchased silicofluoride.

What's left over of potassium silicofluoride after enamel frits demands are met is divided between the fluxing of light metals and ceramics. In the fluxing of secondary aluminum it helps remove magnesium. And the silicofluoride acts as a sand inhibitor for magnesium casting in sand molds.

Potable Silicofluoride: The potassium silicofluoride market pace has been more than matched, of course, by the heavy sales of sodium silicofluoride for fluoridation of drinking water. This ground swell of demand, beating back the nearest competitor, sodium fluoride, will help lift output of the major silicofluoride or fluosilicate to 36-40 million lbs.* this year. That's up from an estimated 34 million lbs. last year, and well above the 25.4 million lbs. turned out in 1952.

Currently, water fluoridation outstrips any other use of sodium silicofluoride, taking some 10 million lbs./year. Laundry sour makers will place orders for another 6-7 million lbs. A similar volume will go to opal glass and vitreous enamel frits manufacturers, who will each buy some 5-6 million lbs.

At the next lower requirement level, the year ahead will chalk up 2-3 million lbs. of sodium silicofluoride for the manufacture of sodium fluoride, and nearly 2 million lbs. for latex foam rubber production. Rounding out the consumption of sodium silicofluoride are these miscellaneous uses: production of beryllium; aluminum fluxes; as an insecticide; and in some fiberglass.

Score for Sodium Salt: The long-term outlook for sodium silicofluoride demand shapes up this way. Potential consumption may glide up to 50 million lbs./year, paced, of course, by public water fluoridation. Rising demand is foreseen, too, in foam rubber (unless the polyurethane foams capture that market in the future), and to a lesser extent in opal glass. The switch to the potassium salt in vitreous enamel production will cut down the position of the sodium counterpart in that industry if the current price ratio of the two compounds holds. Chances are, though, that use of the sodium salt as a flux in other industries will continue to rise.

Orders for sodium silicofluoride in laundry sours will be sluggish, as small-

* The silicofluorides are salts of hydrofluosilicic acid that may be produced from the silicon tetrafluoride liberated by the acidulation of phosphate rock.

* Chief producers are American Agricultural, Baugh, Blockson, Davison, Smith-Douglass, and U. S. Phosphoric Products (division of Tennessee Corp.).

For QUALITY
SERVICE
SATISFACTION
SPECIFY
HAMMOND
Multi Wall
PAPER
BAGS
Hammond Betterbags
HAMMOND BAG & PAPER CO.
General Offices: Wellsburg, W. Va.
Plants in Wellsburg, W. Va.
Pine Bluff, Ark. • Charlotte, N. C.

AMINES
Monoethanolamine
Diethanolamine
Triethanolamine
THE CP
CHEMICAL SOLVENTS
INCORPORATED
60 PARK PLACE • NEWARK 2, N. J.
WOrth 2-7763 MArket 2-3650

unit neighborhood laundry services compete for sour-consuming power laundry business. Consumption of the salt in making sodium fluoride may continue to decline as demand for the latter appears unsettled.

On the other hand, an apparent boost to domestic producers of sodium silicofluoride will come from declining imports (about 4 million lbs. this year) as European industries consume silicofluorides that were surplus a year ago.

Both the sodium and the potassium salts are the least soluble of the commercial silicofluorides. By contrast, the zinc, ammonium, and magnesium salts are often grouped as the "soluble silicofluorides."

Rising popularity of the zinc salt with laundry sour makers has now pushed sales to this industry to an estimated 2.5 million lbs./year. The balance of the zinc product is shunted into mothproofing agents and into concrete hardeners when combined with magnesium silicofluoride.

Ammonium silicofluoride, too, serves chiefly in laundry sours and in mothproofing agents. Mothproofers apply silicofluorides where dry-cleaning solvents would dissolve organic mothproofing chemicals. Demand has drifted downward with the decline in wool-textile usage.

Add these applications of the ammonium salt: a disinfectant in the brewery industry, a glass etchant, a reactant in the production of ammonium chlorate, an ingredient of some electroplating solutions, and as a sand inhibitor in casting magnesium metal.

The soluble magnesium salt has the principal job of revamping concrete or cement surfaces. Variations in mixing concretes often yield surfaces that become dusty. Solutions of the magnesium silicofluoride with wetting agents, etc., harden (minimizing dust) and waterproof such surfaces. Such treatments tag about 80% of the salt's output.

Although a number of trade experts foresee this year's turnout of the magnesium product hovering at a 1.5-million-lb. rate (*see table, p. 77*), fact is a few are betting consumption will come closer to a 2-million-lb. level. Magnesium silicofluoride makers, of course, see no problem in supplying whichever quantity the market will require.

While the fortunes of the soluble silicofluorides (zinc, ammonium, and magnesium) will gradually improve each year, the heavyweights—sodium and potassium salts—will continue as the headliners in growth. Potassium silicofluoride will steal sales at the expense of the sodium product, but sodium silicofluoride will battle all comers in water fluoridation and reach for a 40-million-lb. total market in a year or two.

Pacing Plastics

The upcoming 12 months continues to be hailed as a period of improvement by spokesmen for most segments of the chemical process industries. And plastics—one of the fastest-growing areas of the country's economy—is no exception. Here's the latest '55 sum-up: approximately 2849 million lbs. of synthetic resins will be produced; value of all finished plastics products will climb to some $1425 million.

The estimates are from the Society of the Plastics Industry, which keeps a close running watch on all sections of the trade. Actually, plastics raw material output suffered through a slump during most of last year, but an unusually strong fourth quarter helped reverse the downward trend. Result: on an over-all basis, '54's volume (an estimated 2714 million lbs.) will nudge the year into the industry's second-best slot. Only topper, and that by a mere 3%, was '53's rip-roaring 2776.6 million.

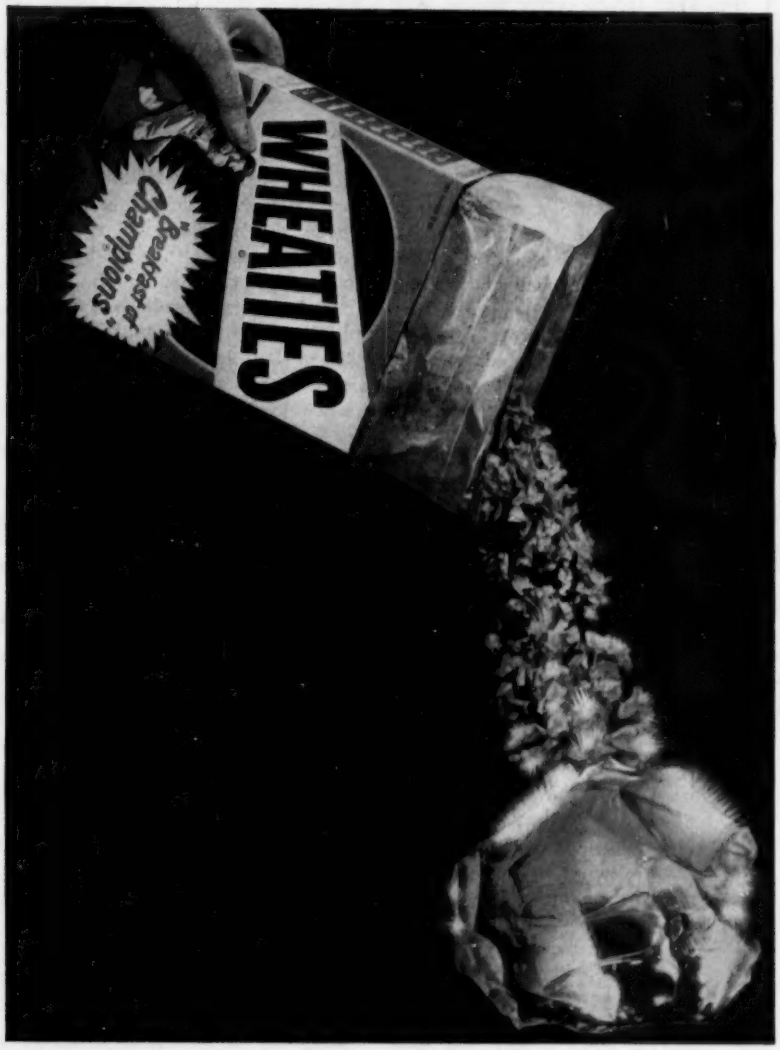
SPI estimates for last year are based on still-incomplete statistical data for the full four quarters, but monthly checks indicate that during the October-December stretch, output and sales were above the levels for '53.

The year-end surge is behind the optimistic belief that this year will head toward new sales and production peaks. Then, too, rock-bottom inventories at store levels for many plastic items at the present time are in direct contrast with early '54 when high stocks played hob with resin makers' production schedules.

Pull-up at Ten: Prior to the abrupt fall pickup in general plastics business, latest available government figures show that while production of some raw materials was down rather sharply, others remained pegged at near-'53 rates or registered substantial gains.

In the molding field, for example,

Your Imagination and Polyamide Resins Can Do Almost Anything



From Wheaties to industrial chemicals was not a big step for General Mills. The "know-how" that produced Wheaties played a large part in developing Polyamide Resins and other chemical products.

● General Mills Polyamide Resins are now among the most versatile of all chemical "ingredients." They are used in processing or formulating a remarkable range of products from shoes to fire retardant paints. They improve performance characteristics of glass laminates, foil coatings, papers, plastic films, modeling waxes, overprint varnishes, pottings and castings—to name a few. Nobody yet knows the total extent of their uses in cost-saving product improvement.

Have you a product that needs greater impermeability or better adhesion, more toughness or better wearing qualities? Consider the application of these versatile resins. Their narrow and highly controllable melting points, and the controllability of heat seal temperatures and hardness through blending of high and low melting point Polyamide Resins, add to their range of uses.

Polyamide Resins make excellent thermoplastic adhesives because they heat seal easily, bond at moderate temperatures, and set almost immediately. In addition, they are non-blocking, and have good heat and color stability. They are resistant to oils, commercial antifreeze, wax emulsions, detergents and other solvents, water and grease.

We'll be glad to work with you in developing any new adaptation of Polyamide Resins to solve a specific problem.

For detailed information, please send the coupon below.

We also manufacture a complete line of Fatty Nitrogen Compounds and Fatty Acids.

SEND THIS COUPON

PROGRESS THRU RESEARCH

General Mills CHEMICAL DIVISION
KANKAKEE, ILLINOIS

Please send me technical information on . . .

☐ Polyamide Resins ☐ Fatty Amines ☐ Fatty Acids

I am interested in using it for_____

Name_____

Firm_____

Address_____

City_____ State_____

W-1-22-55

phenolic compounds skidded most, last year. Output for the first 10 months dropped some 23% below the comparable period in the previous year. The score: 148.3 million vs 193.2 million lbs. That tallies pretty closely with SPI's report indicating an almost-18% decline in thermosetting molded products for the same months.

Some thermoplastic compounds were down, but slightly: cellulosics by 4.3%; vinyls, a near-5%; polystyrene, off by 4.7%.

The latter, however, maintained its poundage leadership among the molding materials. Production for January through October totaled about 266.7 million lbs. (1954), compared with the higher '53 turnout of 284.4 million.

The miscellaneous molding materials category, which includes acrylics, epoxys, polyethylene, nylon and others, jumped to 157.6 million lbs., some 35% over the first 10 months of '53. Polyethylene, of course, was the big decline-offsetting factor in the group. Consumption during the whole of '54 will probably hit about 195 million lbs.—a good 60 million above the year before.

And it's not difficult to find trade observers who are convinced that packaging, housewares, insulation and other outlets will take as much as 250-300 million lbs. of polyethylene this year. There's no dearth of supply in sight, though. At least four new producers due in soon will raise U.S. productive capacity to perhaps 550 million lbs. by the end of '55.

Such soaring accents the point that plastics, now accounting for about 25% of the sales value of all synthetic organic chemicals, will continue to pace a high-stepping chemical industry growth.

Magnesium Moves

News item: Baltimore. The first flight of an experimental all-magnesium airplane, an F-80C, is expected to be held sometime during February at Mitchell Air Force Base, N.Y., the Air Research and Development Command announced today.

News item: New York City. Shwayder Brothers, one of the nation's major luggage manufacturers, yesterday unveiled its new line of Samsonite Ultralite, the first mass-produced consumer product to be made of magnesium. The light-but-tough metal luggage *(see cut)*, developed in conjunction with Dow Chemical, is vinyl coated, has been flight-tested for durability and ease of handling.

THUS do two apparently divergent news notes this week dovetail to underscore magnesium's ready-poised drive for markets *(CW, Jan. 15, p. 71)*.

The airframe of the F-80C is almost wholly constructed of the sea-derived metal. It was built by East Coast Aeronautics under contract to the Air Research and Development Command's Wright Air Development Center (Dayton, O.). Much depends—from a market standpoint—on the plane's flight. Reason: WADC will attempt to determine the complete suitability of magnesium employed in the structures of fighter-type aircraft.

In the luggage outlet, magnesium—rolling as sheet out of Dow's new Madison, Ill., mill—will be given a hearty shove toward greater consumption levels. Shwayder, which boasts one-fourth the total volume of the U. S. luggage business, plans to turn over about 25% of its plant's capacity to the new product.

Pyrethrum? Allethrin? ask MGK

As acknowledged pioneers and recognized authorities in the correct use of pyrethrum, allethrin and their most effective synergists, MGK 264 and piperonyl butoxide, we offer standardized concentrates, extracts, dusts of guaranteed uniformity.

If your aerosols, sprays, or dusts include the use of the powerful, safe and spectacular knock-down agents, pyrethrum and allethrin, send your inquiry today. All requests for information answered by qualified authorities. Write.

MGK McLAUGHLIN GORMLEY KING Company

1713 S.E. Fifth Street • Minneapolis, Minnesota

You gotta be first...

to be best!*

*25 years ago, Alloy Fabricators started to build Stainless Steel, Monel, Inconel, Nickel and Aluminum Process Equipment. With this experience, naturally, they're your best bet today!

It's Still Our Only Business — And We Mind It Well!

ALLOY FABRICATORS

DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

PERTH AMBOY, NEW JERSEY

Corrosioneering News

Quick facts about the services and equipment Pfaudler offers to help you reduce corrosion and processing cost.

Published by The Pfaudler Co., Rochester, N.Y.

Pfaudler takes the guesswork out of buying columns

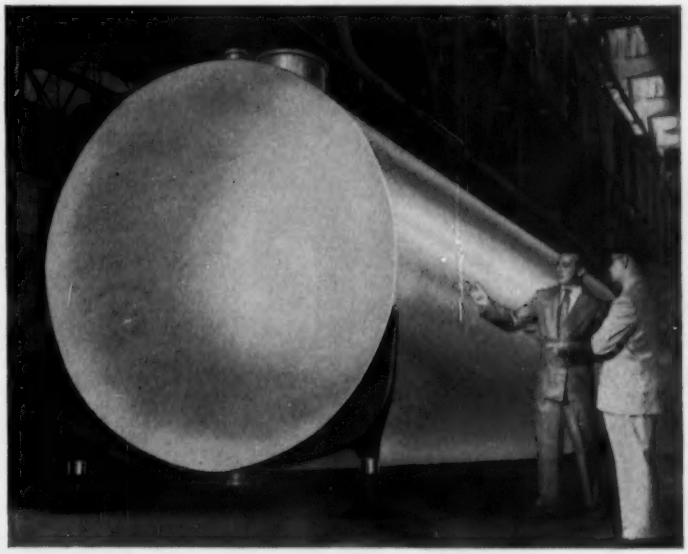
One of the knottiest problems in chemical equipment today is purchasing a column.

You may want one for distilling, absorption, extraction, spray drying or special reaction. You find yourself confronted with a bewildering selection of tray-type, bubble cap, Turbogrid, perforated, etc.; packed types or spray columns.

For help in selecting a column best suited for your particular problem, you get unbiased advice from Pfaudler, which offers *all* types in practically every material of construction, from low-cost, corrosion-resistant glassed steel to the expensive alloys.

You can save money with Pfaudler's "flexible standards." Most commonly requested "custom" features have been included in these stock designs, eliminating the expense of special design and fabrication, giving you faster delivery, and the advantages of standard components.

One of our process engineers, W. F. Swanton, has written an evaluation of various types of columns, called "How to Buy a Column." Write for your free copy of this helpful guide.



Latest news in chemical storage is new line of glassed steel "Chemstor" tanks—sizes up to 35,000 gal., low in cost with choice of two types of glass.

Durable new "Chemstor" tanks save money on chemical storage

One of the critical needs of the chemical processing industries is for a chemical storage tank that is easy to clean, prevents product contamination, and doesn't cost too much.

Now you have it in the new "Chemstor" series—unjacketed, horizontal, glassed steel tanks in standard sizes from 750 to 35,000 gals.

Two types of glass are available, depending on service requirements. Type No. 27 is for mild service, such as storage of phenol, formaldehyde, food products, and other noncorrosives. "Chemstor" tanks with this glass are available up to 35,000 gals.

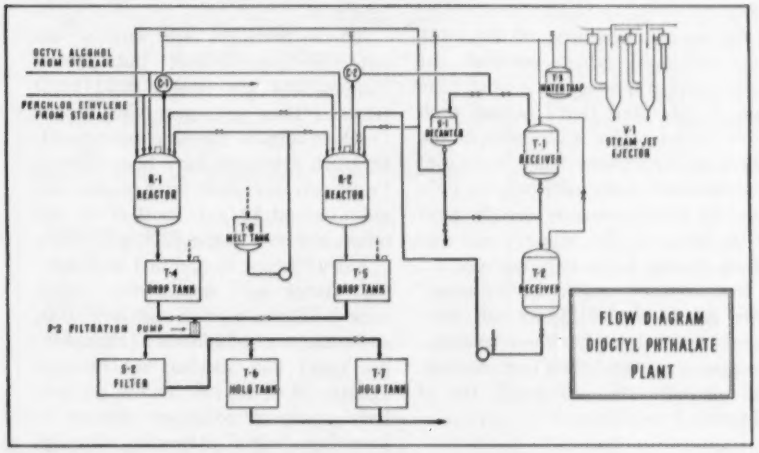
For storing corrosive acids, such as sulfuric and hydrochloric, we recommend No. 28T glass. This provides excellent corrosion resistance, up to 125° F., and is available in the "Chemstor" line up to 15,000 gals.

Low first cost

"Chemstor" tanks cost you little—as low as 25¢ per gallon volume in the largest size. Both glass and steel are low-cost materials, the manufacturing method is not expensive, the tanks are simple in design—and built as standard models which can be produced quickly.

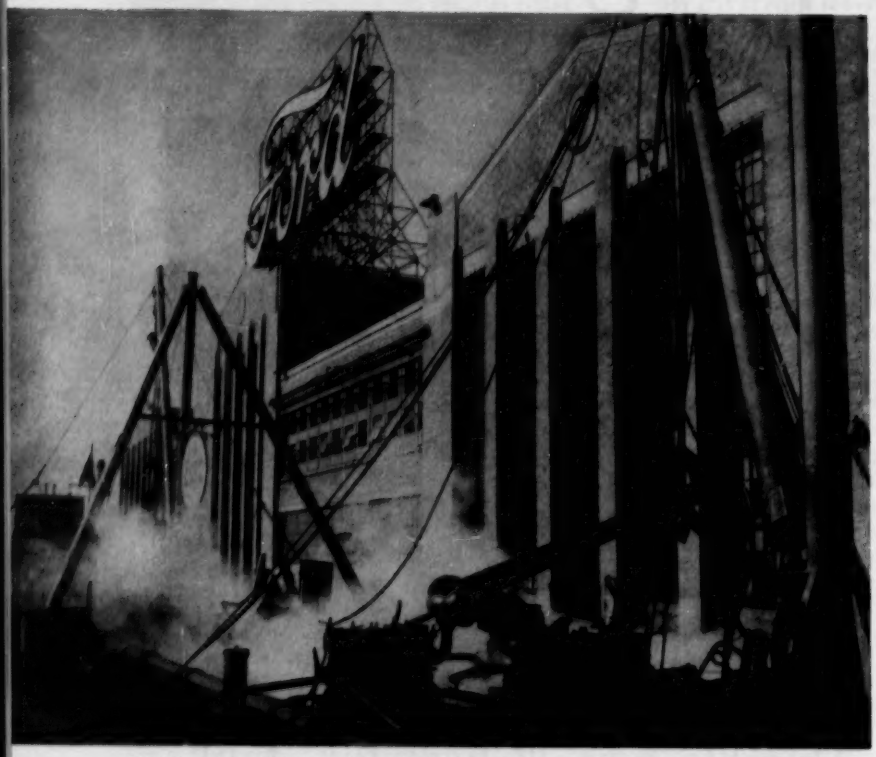
For low-cost storage, with product protection and fast cleaning, it will pay you to learn more about "Chemstor." Write for your free copy of Bulletin 918, giving full details.

NEW DIOCTYL PHTHALATE "PACKAGED PLANT" SAVES 5c A LB.



This new system—offered as a 100% engineered and delivered package by Pfaudler—enables you to realize great savings by making your own plasticizers. Usually pays for itself within six months.

If you're working on vinyl plastics, cellulose esters, synthetic rubber, or other plasticizing jobs, write for detailed information on "Plasticizer Process."



REFUELING FORD: A bargeload of residual oil adds to the market for additives.

A Boost for Heavy Fuels

There's a renewed push to sell the sludge-removing, burn-improving additives for residual fuel oils.

Aim: to enlarge the still-small additives demand now only a small portion of the potential of 5.9 million gal./year.

Fuel oil specialties makers these days are taking a calculating look at the lusty vigor of U.S. industry. For humming factories have a hearty appetite for heavy residual fuel oils, and create a hefty potential market for oil additives.

In operating the power plants at electricity generating stations, aboard ships, in mining and smelter works, in heavy industry of all sorts, a total of 562,689,000 bbls. (of 42-gal./bbl.) of the viscous oils (grades No. 5 and 6, also called Bunker C or residual oils) were used in '53—latest year for which figures are available. That means a potential market for about 5.9 million gal. of "resid" additives, at the common ratio of 4000 gal. fuel/1 gal. additive. A substantial market, indeed.

As any manufacturer of the additives will sadly admit, however, the actual market is now only a small fraction of this. And that's behind their drive to get wider acceptance of the heavy oil improvers. They point out that the market for additives for light (No. 2) distillate oils is already giant (*CW, Feb. 14, '53, p. 65*), and that oil companies favor improver use.

But the heavy resids, the "leftovers" after gasolines and lighter oils have been removed, are seldom treated—their price is roughly half that of crude, and oil refiners cannot justify use of additives.*

*An exception is the heavy fuel for gas turbines. These oils are often treated with calcium or magnesium to avoid corrosion problems that arise when oils contain small amounts of vanadium.

Not that the oils can't use a boost. Many resids are high in sludge-forming unsaturates and sulfur, and sometimes the moisture content is undesirably high. Formation of gummy sludge, and corrosion are problems frequently met with present-day heavy oils; and refining processes that get more gasoline and light oils from crudes are constantly lowering the quality of the residual oils.

Sludge Attack: Because sludging is the major problem, it has been the target of most manufacturers of additives. For about 20 years, sludge-dispersing (often termed "dissolving") compounds have been offered. These have been, generally, based on coal tar-derived products such as methyl- and dimethylnaphthalenes. More recently, formulations have become common that include surface-active agents to emulsify water in the oil.

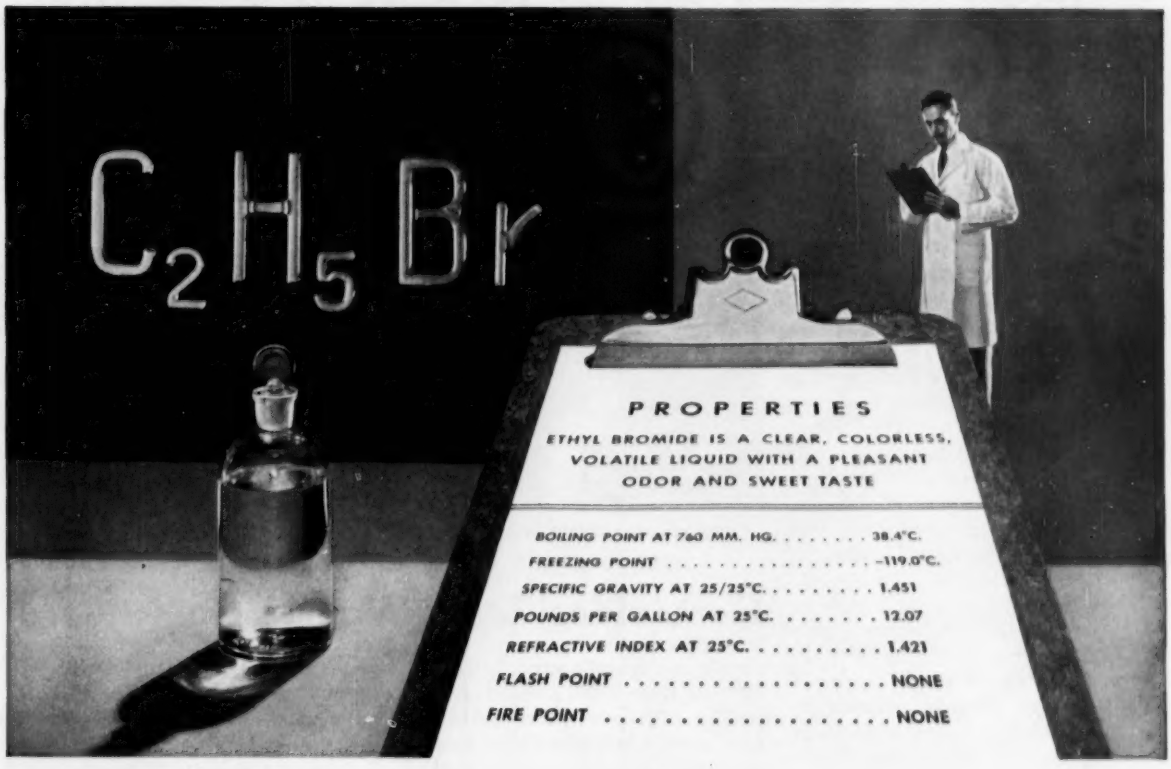
Most of these compounds are made by small firms that cater to heating plant care, are seldom distributed more than 50 miles from the manufacturer's shop.

There are, however, some nationally sold products, such as Dearborn Chemical Co.'s (Chicago) Dearsol No. 25; Gamlen Chemical Co.'s (San Francisco) Gamlenol; E. F. Houghton's (Philadelphia) Houghto-Solv; Kemsol Products' (Cleveland) Kemsol; Metro Refining Co.'s (Long Island City, N. Y.) Sludgeout; National Aluminate's (Chicago) Nalco SR series; Universal Refining Co.'s (New York) Sludgenemy, to list a few of the many products.

These products are largely unpatented formulations, but precise compositions are closely held trade secrets. They are generally liquids (sold in drums for the most part), although dry types have been offered. Prices are anywhere from under $1/gal. to about $4/gal.; most of the top sellers are now in the $2-3/gal. range.

Extra Claims: In addition to dissolving sludge and emulsifying water, some additives contain rust inhibitors, and some, soot eliminators (often copper salts) and alkaline anticorrosion agents. Most oil refiners are particularly chary of additives claimed to have these "extra" properties, although many accept the worth of sludge dispersants and water emulsifiers.

Fuel improvers are added by the


C_2H_5Br
PROPERTIES
ETHYL BROMIDE IS A CLEAR, COLORLESS, VOLATILE LIQUID WITH A PLEASANT ODOR AND SWEET TASTE
BOILING POINT AT 760 MM. HG. . . . . 38.4°C.
FREEZING POINT . . . . . -119.0°C.
SPECIFIC GRAVITY AT 25/25°C. 1.451
POUNDS PER GALLON AT 25°C. 12.07
REFRACTIVE INDEX AT 25°C. 1.421
FLASH POINT . . . . . NONE
FIRE POINT . . . . . NONE

LET DOW INTERMEDIATES HELP IN RESEARCH AND PRODUCTION

Dow ethyl bromide, one of Dow's many intermediates, helps make chemical synthesis easier and is usefully applied from laboratory to full-scale production

The Dow Chemical Company
Dept. FC 352B-1, Midland, Michigan

PLEASE SEND ME EXPERIMENTAL SAMPLE OF ETHYL BROMIDE.

Name_____

Title_____

Address_____

Company_____

City_____ State_____

Extensive production facilities, combined with long experience, make it possible for Dow to serve you efficiently with chemical intermediates that you can depend on for many useful applications.

Dow ethyl bromide is an important intermediate used as an ethylating agent in the synthesis of many organic chemicals including drugs. It requires less drastic conditions for chemical synthesis since it does not need as high a temperature or pressure as normally employed with other commonly used ethylating agents.

Dow is your logical source for ethyl bromide. Fifty-five years of close association with bromine, its development and its compounds assure a dependable, continuous supply. For detailed data on Dow ethyl bromide or other bromides such as listed below, write THE DOW CHEMICAL COMPANY, Midland, Michigan.

OTHER TYPICAL DOW BROMIDES:

Isopropyl bromide
Bromoform
Allyl Bromide
Trimethylene chlorobromide
2,4,6—Tribromophenol
Amyl bromides
Butyl bromides
Trimethylene bromide

you can depend on DOW CHEMICALS

DOW

furnace operating crews. Sometimes they are put in as the storage tanks are being filled, other times after the filling has been done. Montgomery Chemical Co. (Jenkintown, Pa.), for example, suggests addition of its Sludge Solvent No. 32 after the tank has been filled. The additive, because of its high specific gravity, sinks to the bottom of the tank, where it can peptize the sludge (believed to be formed by the polymerization of the olefins).

Admitted Limits: Most specialties makers are aware that it will be exceedingly difficult to sell all users of resids. Plants that consume 10 or more million gallons of the heavy oils per year seldom have sludging problems—they store only a few days' supply of fuel, depend on frequent oil delivery. And in ocean-going vessels, where fuel tanks are generally agitated frequently, sludge seldom forms.

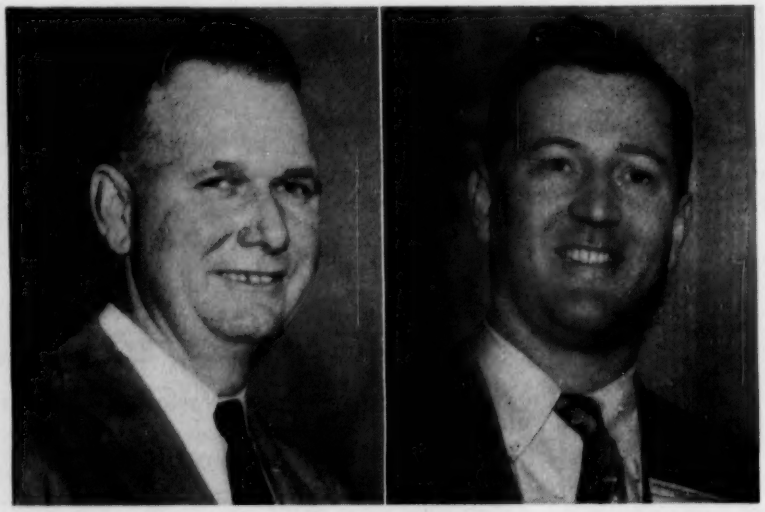
Nonetheless, there are numerous firms that feel they get improved combustion efficiency when they use additives, and they are steady buyers of the improvers. There is increasing attention being paid to fuel problems in such journals as *Industry and Power* and *Power*. This concern about residual oil shortcomings and how they can be overcome should insure an improving market for fuel additives.

Official Debut

Cyclethrin, a "synthetic pyrethrin" insecticide was offered last week for test purposes by Carbide and Carbon Chemical Co. (division of Union Carbide and Carbon Corp.). First unveiled last spring (*CW, June 5, p. 58*), the new insecticide is suggested for formulation in such products as household aerosol sprays.

Cyclethrin is related in structure to the natural pyrethrins, and has the advantages of quick "knockdown" and low mammalian toxicity characteristic of the natural product. Carbide claims it can be synergized with compounds like sulfoxide and piperonyl butoxide (more readily so than allethrin), which makes it economical to use against such insects as houseflies, gnats.

The complex cyclethrin molecule (chemically: 3-(2-cyclopentenyl)2-methyl-4-oxo-2-cyclopentenyl chrysanthemummonocarboxylate) was first synthesized at Carbide's South Charleston, W. Va., labs, and has been evaluated at Boyce Thompson Institute.



NEWCC'S VAN GELUWE, SCHREIBER: New president, annual award winner.

Herbicides: Long Way to Go

Despite herbicides' success in the past 10 years, there is still a surfeit of weed problems. That was clearly evident in talks given at last week's annual meeting of the Northeastern Weed Control Conference in New York.

For example, Canada thistle growing in wheat fields at Saint Anthony, Idaho, don't react the same to 2,4-D as do Canada thistle in similar plots in Bozeman, Mont., 120 miles away. This was cited in a speech by M. W. Parker, agricultural administrator, division of weed investigations, USDA, Beltsville, Md.

Sine Qua Nons: He used this illustration to emphasize that there can be no answer for this difference in response until more attention is devoted to "the role that environment plays in relation to herbicidal action." He's also of the opinion that herbicide progress in the future is going to become more and more difficult. Reason: weed problems will be more demanding for specificity.

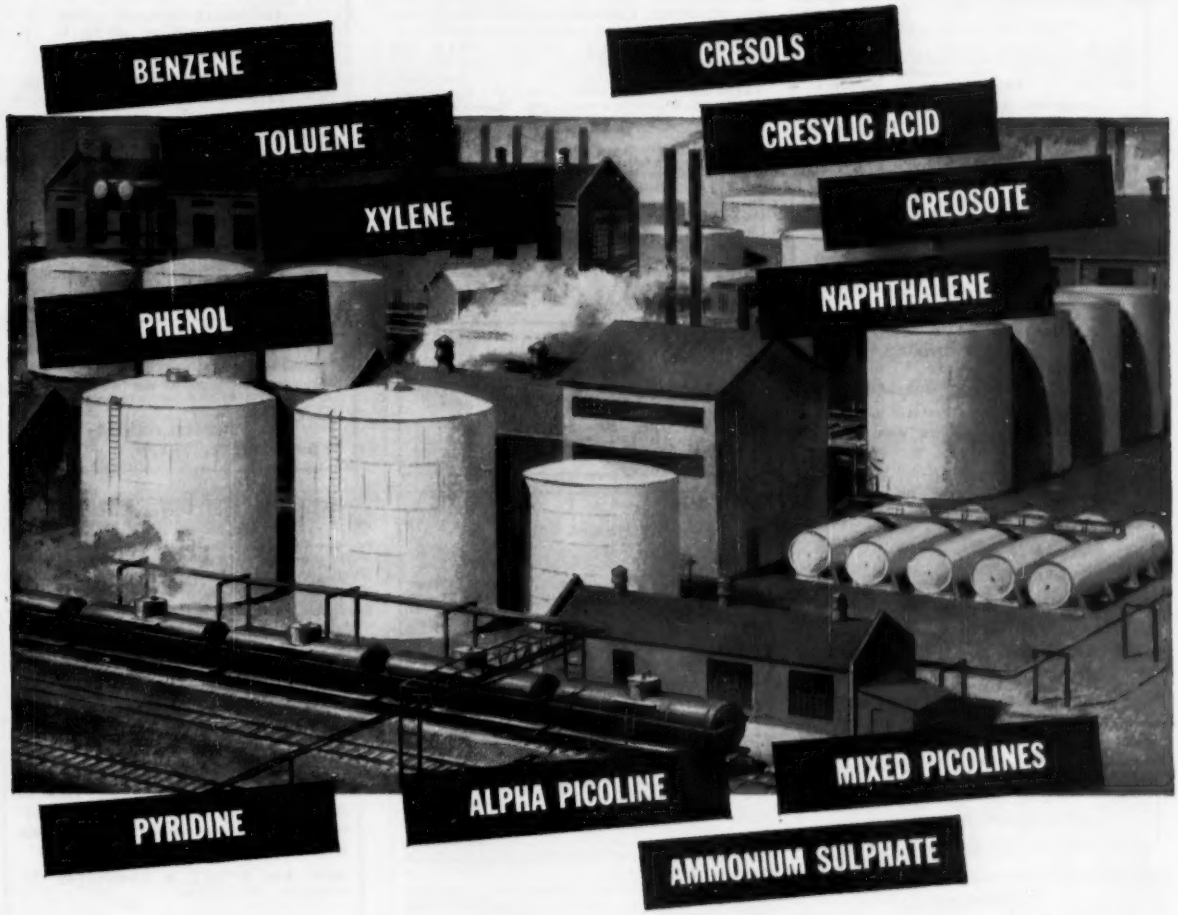
One thing he feels may slow down man's fight against weeds is "the lack of well-trained personnel." What would help improve this situation most, he believes, is for herbicide specialists to "prescribe the type of training that a weed research man should have, and make these requirements known to colleges and universities."

Another thing he would like to see is greater governmental emphasis on herbicides. Unless there is more emphasis in the future, farmers will not be able to adopt "the technological advances that we have developed in this fast-moving field," he said.

Promising Nine: Of the many chemicals tested as new herbicides in 1954, these are among the most promising, according to R. J. Aldrich, assistant research specialist, New Jersey agricultural experiment station:

- 2,2-Dichloropropionic acid (sodium salt)—Dalapon. Pasture renovation, control of perennial grasses, also bedstraw in birdsfoot trefoil.
- 3-Amino-1,2,4-triazole—amino triazole. Pastures, perennial weeds, redroot in cranberries.
- 3,4-Dichlorophenoxyacetic acid. Control where alfalfa is involved.
- 2,3,6-Trichlorobenzoic acid and its sodium salt. Pre-emergence control in corn.
- Sodium 2,4,5-trichlorophenoxyethyl sulfate and related chemicals. Tomatoes, goosegrass in golf-greens.
- 3-(3,4,Dichlorophenyl)-1,1-dimethylurea. Certain advantages over CMU in that it gives longer control, allows greater safety to vegetables.
- 2,4,5-Trichlorophenoxypropionic acid. Pre-emergence control in corn.
- 2-Chloroethyl N-(3-chlorophenyl)-carbamate and 2-(1-chloropropyl) N-(3-chlorophenyl) carbamate. Control in mustard greens cabbage and related vegetables where CIPC is somewhat toxic.
- Disodium methylarsonate. Con-

UNITED STATES STEEL—one source of supply for all these COAL CHEMICALS



United States Steel offers

PROMPT and EFFICIENT SERVICE on coal chemicals

• United States Steel has ten plants producing coal chemicals. When you order your chemicals from U. S. Steel, you are assured of prompt service and shipment to meet your production needs. For more information, contact our nearest Coal Chemical Sales Office, or the United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS Coal Chemicals

4-822

UNITED STATES STEEL

tracers...to opportunities in the chemica

MANAGEMENT SERVICES

Clark Microanalytical Laboratory

Routine analyses in one week

CH, N, S, Halogen, Fluorine, Active Hydrogen, Alkoxyl Alkimide Acetyl Terminal Methyl, etc. Identifications and minor research problems by specialists in organic microchemical analysis.

HOWARD S. CLARK, DIRECTOR
P. O Box 17 Urbana, Ill.

ENGINEERING CORPORATION OF AMERICA

Chemical & Petro-Chem Process Plants
Industrial Waste Treatment Projects
Air Pollution Abatement
Special Mechanical & Process Equipment

205 Grove Street Westfield, N. J.
Westfield 2-7117

J. D. JOFFE, LITERATURE CHEMIST

A CHEMICAL INFORMATION SERVICE

Technical, Scientific & Economic Reports and Related Consulting Work.

50 E. 42nd St., New York, N. Y. MU 3-1200

THE C. W. NOFSINGER COMPANY

Personalized Engineering Service
PETROLEUM REFINING AND CHEMICAL INDUSTRIES

- Surveys—Planning—Process Design
- Engineering Design—Drafting—Procurement
- Supervision of Construction and Operation

906 Grand Avenue, Kansas City 6, Missouri

JAMES P. O'DONNELL

Engineers

CHEMICAL PROCESS PLANTS

Design—Procurement—Construction Supervision

39 Broadway, New York 6

SIRRINE

ENGINEERS

Plant Design & Surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment; Analysis & Reports

J. E. SIRRINE CO.

Greenville South Carolina

Wisconsin Alumni Research Foundation

Project Research, Consultation and Production Control Services in Biochemistry, Chemistry, Bacteriology, Entomology, and Pharmacology.

Write for price schedule

Wisconsin Alumni Research Foundation
P.O. Box 2059-G • Madison 1, Wisconsin

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

Position Vacant

Wax Salesman or Wax-Chemist—to sell beeswax, carnauba wax, candelilla, micro, paraffin and substitutes. Our employees are aware of this adv. Mail qualifications to P-5200, Chemical Week.

EMPLOYMENT

Positions Vacant

Distributors & Jobbers Wanted: Within 250 mile radius of N.Y. by mfg. of new type chemical specialties-cleaning compounds, liquid detergents, waxes, disinfectants: seeks jobbers and distributors who contact hotels, restaurants, hospitals, industrial plants, etc. Private label work our specialty. Have outstanding production facilities and development laboratories: P-5162, Chemical Week.

Man for Research and Development Department of New England company manufacturing metal finishing products with national distribution. Must have broad experience in metal finishing and plating and be willing to travel and lecture. Ultimate position to be director of research and development. In reply give full details on technical background, experience, previous employment and salary requirements. All replies will be held confidential. P-5178, Chemical Week.

CHEMIST

$4200
Laboratory Position in Major Plant of National Organization Kansas City Location
Advancement Opportunities in All Fields of Production
Excellent Working Conditions
Requirement: B.S. Degree in Chemistry
P 5078 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

TECHNICAL EDITORS

To provide for its continued growth Chemical Week is seeking two additional assistant editors—preferably chemists or chemical engineers with two to three years business experience. Essential: Ability to meet people, dig out facts, interpret them intelligently and write lucidly. Please submit resume to:

Personnel Director
McGraw-Hill Publishing Co.
330 W. 42nd St.
New York 36, N.Y.

Positions Wanted

Mgr. chemicals related products imp. exp. sales purchases. Diversified exp. — 20 years large Jap. Corp. — present employers 14 years. Some travelling abroad; traded during scarcity periods. Also qualify purch. agent. Prefer large mfr. PW-5040, Chemical Week.

Technical Sales-Service 3½ yrs. diversified industrial experience: technical service, sales development, equipment demonstration and evaluation—(mixing, grinding, drying, extrusion, etc.) also, 3 yrs non-technical sales experience. B.S. Che 51, veteran, 28, married. Desires position with potential!! PW-5159, Chemical Week.

Selling Opportunities Wanted

Technically competent agent offers chemical representation in sales and sales development. Principal inquiries solicited. RA-5050, Chemical Week.

Experienced chemical salesman with chemical engineering degree and following chemical and process industries Western New York State seeks connection as a manufacturer's agent principals only. SA-5228, Chemical Week.

DEALERS in used-surplus

Buy With Confidence

Send us your inquiries for your requirements in Used Chemical and Process Machinery.

—"our 37th year"—

Consolidated Products Co., Inc.
154 Observer Highway, Hoboken, N. J.
Hoboken 3-4425 N. Y. Tel. Ba 7-4800

CHEMICALS WANTED

BUYERS OF SURPLUS

CHEMICALS—OILS—SOLVENTS
DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

WANTED

Surplus Chemicals, Resins, Pigments, Solvents — organics and inorganics

Specialists in paint, varnish and lacquer raw materials, including finished goods, recovered, and off-spec solvents

CHEMSOL, INC.
70 Dod Street, Elizabeth, N. J. • EL 3-1369

BUSINESS OPPORTUNITIES

Will purchase outright small manufacturing plant, chemical or related products, New York metropolitan area. BO-5185, Chemical Week.

Products Wanted

TO MANUFACTURE

Well known Swiss chemical factory of medium size, well located and good financial standing, with an excellent staff desires to take up manufacture of some additional lucrative products in spare rooms.

Payment possible on a license basis. Exchange of production methods if desired. Later on possibility of total or partial take-over of factory at favorable conditions because of approached age of proprietor. Agent desired.

Write Box P 34-1 A PUBLICITAS SA. Lausanne, Switzerland.

Chemical Developments

Interested in the
AUSTRALIAN MARKET?

A progresssive Australian Company (established 1910), manufacturing industrial chemicals, wishes to exploit new chemical developments under license from U. S. manufacturers. Managing Director will visit U. S. in May, 1955 and would appreciate preliminary correspondence from interested manufacturers. Finance available for new projects.

CAMPBELL BROTHERS, LTD.
Campbell Street, Bowen Hills
Brisbane, Australia

SPECIAL SERVICES

Truland Chemical & Engineering Co., Inc.

AVAILABLE CUSTOM REFINING FACILITIES
Distillation, Extractions
Separations, Fractionations

WANTED All Types of Crude Mixtures
Drum Lots - Tank Cars
By-Products, Residues, Wastes
Contaminated Solvents

Box 426, Union, N.J. Murdock 6-5252

rocess industries

SPECIAL SERVICES

West Coast market-sales development. Have your products-services represented in this growing market. Traveling Southwestern Pacific areas. Contact C. Miller, 120 Highbrook, Pelham, New York.

EQUIPMENT--used-surplus

For Sale

Filter, Niagara, Stainless, 110 Sq. Ft.: St. St. Slurry Feeder. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Lightnin Side Entering Stainless Steel Mixers— Unused—Sev-2500 (25 HP) and Sev-750 (7½ HP). Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Tank, Stainless Clad, 6000 gal. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Deionization Equipment (used) 2 units—by Illinois Water Treatment Co. Particulars upon request. Please reply to Box 128, Station "H", Toronto 13, Ontario, Canada.

FOR SALE

DRACCO PNEUMATIC

CONVEYING SYSTEM

Includes Receiving Station, Rotary Air Lock, Shakers, Vacuum Pump, 60 h.p. Motor, Unloading Pipe and Hose. Used 6½ Years For Unloading Soda Ash Hopper Cars. Capacity 10 Tons/Hr. Good Condition. May Be Inspected At Present Site.

Cowles Chemical Company

Skaneateles Falls 2, N.Y.

Wanted

Used Baker Perkins Laboratory size mixer equipped with sigma arm blade and motor. Send information to the American Fluresit Co., Cincinnati 27, Ohio.

WANTED

MACHINERY OR PLANT INCLUDING

Vacuum Dryers	Columns
Filter Presses	Pulverisers
Heavy Duty Mixers	Packaging and Wrapping Equipment
Rotary Filters	S/S and non-corrosive Storage Tankage
Reaction Kettles	

P. O. Box 1351, Church St. Sta. N. Y. 8, N. Y

THIS TRACER SECTION

can be used whenever you are looking for or offering

EMPLOYMENT
PERSONNEL
EQUIPMENT
SUPPLIES
OPPORTUNITIES
PLANTS
CHEMICALS
PROFESSIONAL SERVICES
MANAGEMENT SERVICES
SPECIAL SERVICES

The rates are low—just call or write

tracers

CHEMICAL WEEK

330 W 42nd St **LOngacre**
NY 36 NY **4-3000**

trol of crabgrass in lawns, gardens.

New president for the association is John Van Geluwe, director of research and development, G.L.F. Soil Building Service (Ithaca, N.Y.). The association's annual award went to Marvin M. Schreiber, assistant professor of agronomy at Cornell University.

•

New and Bigger: Among recently formed firms, and those expanding:

- Roxalin of Canada Ltd. (Toronto), maker of industrial finishes, is planning a $200,000 factory expansion to bring total floor space to 31,000 sq. ft.
- Just chartered in New Orleans is the Brunswick Corp., to make medicine and chemicals.

•

Precaution Revisions: The U.S. Dept. of Agriculture last month revised the warning, caution and antidote statements for economic poison labels.

The two major changes:

- Addition of 44 new precautionary label patterns, bringing the listing of specific chemicals up to date.
- Modification of fire hazard precautions.

There are numerous other smaller changes in the new label patterns—warnings on DDT have been simplified; those on carbon tetrachloride have been strengthened. Full copies of the complete changes are available from the Pest Control Branch, Pesticide Regulation Section. U.S. Dept. of Agriculture, Washington 25, D.C.

•

Syndet Shampoo: A new synthetic

Dip Test for Sealants

THE BRITISH call this a "wading trough." Location: the Motor Industry's Research Assn. center at Lindley, near Nuneaton, Warwickshire. Purpose: to test the waterproofing of underparts made possible with specialty sealing compounds. The maker, B. B. Chemical Co., Ltd. (Leicester), offers a variety for service vehicles, two for private cars. The pair: Bostik, a rubber-based adhesive; Prestik sealing strip, "a permanently plastic composition that is not affected by extremes of heat and cold." Amount of sealing compounds per car runs 2 to 5 lbs., depending on the size.

Britain's current car boom—in one month last year some 39,000 were exported—owes much of its success to the industry-government-financed center. But it's plain that chemical specialties play an important role, too.

detergent shampoo is being offered by Powr-Pak (Bridgeport, Conn.) for private-label packaging in aerosol cans. It's said to be nonirritating, noncorrosive. The formulation contains a germicide and bactericide.

•

Lower Hazard Rating: Because of the safe-use record of aldrin and dieldrin, USDA's pesticides regulation section now permits lower hazard classification for products containing these compounds. New precautions for use will be similar to those recommended for other chlorinated hydrocarbon insecticides, i.e., avoid swallowing, breathing dust, contaminating the skin. The ruling is in line with USDA label acceptance of dieldrin for control of certain pests in the home.

•

Better Burning: A couple of ways to improve furnace oils have been patented recently:

• Joseph Chenicek (Bensenville, Ill.) and Ralph Thompson (Hinsdale, Ill.) seek to reduce sediment formation in stored burner oils by adding a low percentage (0.0005%-1%) of a primary alkanol amine to the fluid. (U.S. Pat. 2,695,222, assigned to Universal Oil Products.)

• John Bartleson (Cleveland) suggests addition of an oil dispersible organic phosphorus compound (0.015% by weight) to the oils to improve the burning performance and reduce carbon deposits on the burner pot. (U.S. Pat. 2,695,223, assigned to Standard Oil of Ohio.)

•

Printed Word: Some of the new brochures:

• American Chemical Paint Co. (Ambler, Pa.) has a booklet on use of its metal-protecting and paint-bonding chemicals.

• American Potash & Chemical Corp. has informational data on its borate weed killer, Tronabor, and on its fire-resistant chemical, Borotherm.

• Acheson Colloids Co. (Port Huron, Mich.) has published a bulletin on dry film lubricating with such products as graphite, molybdenum disulfide, zinc oxide, and mica. Bulletin is No. 438.

• Rust-Oleum Corp. (Evanston, Ill.) has just made available its 1955 general catalog on its rust-preventing chemicals.

•

Sterling Stuff: A silver paint with a water base has been worked out by Robert Gray (Erie, Pa.). Suggested for electrical components, it has good electrical conductivity before drying, and can be dried to a metallic silver film. The paint consists of the metallic silver pigment, a polyvinyl alcohol and water vehicle, and an antifoaming agent.

•

Weatherproofer: To weatherproof fabrics, William H. Shields and Joseph Piepmeyer (Cincinnati) have developed a new process (U.S. Pat. 2,695,250): The fabric is first cleaned in a naphtha-like solvent, then with a surface-active agent. The next step uses a dry-cleaning solvent that contains a heat-unstable compound of aluminum, zinc, zirconium, cobalt or lead. (This treatment will not affect the water repellancy of fabrics already weatherproofed.)

CHEMICAL WEEK • ADVERTISERS INDEX — JANUARY 22, 1955

ALLOY FABRICATORS DIV. CONTINENTAL COPPER & STEEL INDUSTRIES INC. B80
Agency—Hirsm Ashe Adv.

AMERICAN AGRICULTURAL CHEMICAL CO., THE 29
Agency—Cowan & Dengler, Inc.

AMERICAN POTASH & CHEMICAL CORP. 63
Agency—The McCarty Co.

ASHCRAFT-WILKINSON CO. 68
Agency—Liller, Neal & Battle, Adv.

ATLANTIC REFINING CO. 21
Agency—N. W. Ayer & Son

BARECO OIL CO. 50
Agency—White Adv. Agency

BLOCKSON CHEMICAL CO. 25
Agency—William Balsam Adv.

BROWN CO. 56
Agency—J. M. Mathes, Inc.

CARBIDE & CARBON CHEMICALS CO., A DIV. OF UNION CARBIDE & CARBON CORP. 27, B66
Agency—J. M. Mathes, Inc.

CARLSON INC., G. O. 40
Agency—Folts-Wessinger, Inc.

CHEMICAL SOLVENTS, INC., THE C. P. B78

COLUMBIA-SOUTHERN CHEMICAL CORP. .55
Agency—Ketchum, MacLeod & Grove Inc.

CONSUMERS POWER CO. 33
Agency—Commonwealth Service, Inc.

CONTINENTAL OIL CO. 17
Agency—Benton & Bowles, Inc.

CROWN CORK & SEAL CO. 59
Agency—The Clements Co.

DAVISON CHEMICAL CO., THE, DIV. OF W. R. GRACE CO. 67
Agency—St. George & Keyes, Inc.

DISTILLATION PRODUCTS INDUSTRIES DIV. OF EASTMAN KODAK CO. 30
Agency—Charles L. Rumrill & Co.

DOW CHEMICAL CO. 63
Agency—MacManus, John & Adams, Inc.

DU PONT DE NEMOURS & CO., INC. E. I. ORGANIC CHEMICALS DEPT. ... 75
Agency—Batten, Barton, Durstine & Osborn, Inc.

DUVAL SULPHUR & POTASH CO. 68
Agency—Liller, Neal & Battle Adv.

EASTMAN CHEMICAL PRODUCTS, INC. 35
Agency—Kenyon & Eckhardt, Inc.

EIMCO CORP., THE 6
Agency—Matsie Co.

ESSO STANDARD OIL CO. 53
Agency—McCann-Erickson, Inc.

FILTRATION ENGINEERS, INC. 52
Agency—W. L. Towne Adv.

FIRESTONE PLASTICS CO. 72
Agency—Grey Adv. Agency

GENERAL AMERICAN TRANSPORTATION CORP., LOUISVILLE DRYER DIV. 65
Agency—Weiss-Geller, Inc.

GENERAL AMERICAN TRANSPORTATION CORP., WIGGINS GASHOLDER DIV. .. 5
Agency—Weiss-Geller, Inc.

GENERAL MILLS, INC. 79
Agency—Knox Reeves Adv. Inc.

GIRDLER CO., THE 57
Agency—Griswold-Eshleman Co.

GOODYEAR TIRE & RUBBER CO. 1
Agency—Kudner Agency, Inc.

GUARANTY TRUST CO. OF NEW YORK 36
Agency—Albert Frank-Guenther Law, Inc.

GUEST INDUSTRIALS—U.S.A. B70
Agency—Colman, Prentis & Varley, Inc.

HAMMOND BAG & PAPER CO. B78
Agency—Walker & Downing Adv.

HARDESTY CO., W. C. T70
Agency—Branstater Assoc., Inc.

HARSHAW CHEMICAL CO., THE 76

HERCULES POWDER CO. 11
Agency—Fuller & Smith & Ross, Inc.

HEYDEN CHEMICAL CORP. ..... Back Cover
Agency—Sommer-Davis, Inc.

INTERNATIONAL MINERALS & CHEMICAL CORP. 31
Agency—C. Franklin Brown, Inc.

JEFFERSON CHEMICAL CO. 23
Agency—Hazard Adv. Co.

McKESSON-ROBBINS, INC. T58
Agency—Ellington & Co., Inc.

McLAUGHLIN GORMLEY KING CO. T80
Agency—The Alfred Colle Co.

MALLINCKRODT CHEMICAL WORKS Third Cover
Agency—Smith & Williams Adv.

MONSANTO CHEMICAL CO. 37
Agency—Gardner Adv. Co.

MUTUAL CHEMICAL CO. OF AMERICA 8
Agency—J. Hayden Twiss Adv.

OLDBURY ELECTRO-CHEMICAL CO. .. B58
Agency—Briggs & Varley, Inc.

PERKIN-ELMER CORP., THE 71
Agency—Fred Wittner Adv.

PFAUDLER CO., THE 61
Agency—Charles L. Rumrill & Co., Inc.

PFIZER & CO., INC., CHAS. 60, 61
Agency—MacManus, John & Adams, Inc.

PHILLIPS CO., THOMAS 32
Agency—McClure & Wilder, Inc.

PRESSED STEEL TANK CO. T66
Agency—The Buchen Co.

QUAKER OATS CO., THE CHEMICAL DIV. 24
Agency—Rogers, Smith, Potts, Turnbull Adv.

REICHHOLD CHEMICALS, INC. 7
Agency—MacManus, John & Adams Inc.

ROHM & HAAS CO. 51
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.

SHELL CHEMICAL CORP. ..... Second Cover
Agency—J. Walter Thompson Co.

STAUFFER CHEMICAL CO. 28
Agency—J. Hayden Twiss Adv.

UNION CARBIDE & CARBON CORP. CARBIDE & CARBON CHEMICALS CO. 27, B66
Agency—J. M. Mathes, Inc.

U. S. RUBBER CO. 12
Agency—Fletcher D. Richards, Inc.

U. S. STEEL CORP., COAL CHEM. DIV. 85
Agency—Batten, Barton, Durstine & Osborn, Inc.

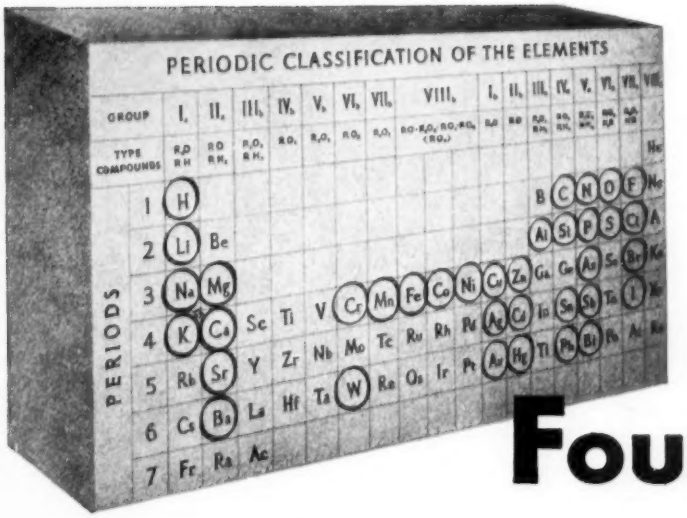
U. S. STEEL CORP., STEEL PRODUCTS DIV. 2
Agency—Batten, Barton, Durstine & Osborn, Inc.

WESTINGHOUSE ELECTRIC CORP. ..41, 48
Agency—Fuller & Smith & Ross, Inc.

WYANDOTTE CHEMICALS CORP. 64
Agency—Brooke, Smith, French & Dorrance, Inc.

LOOK TO MALLINCKRODT FOR YOUR CHEMICAL NEEDS IN THE COMPOUNDS OF . . .

H															
Li												C	N	O	F
Na	Mg										Al	Si	P	S	Cl
K	Ca		Cr	Mn	Fe	Co	Ni	Cu	Zn				As		Br
	Sr							Ag	Cd			Sn	Sb		I
	Ba		W					Au	Hg			Pb	Bi		



the Foundation

Many factors
are involved in the final quality of a product
in the process industries. The inside story of many difficulties, however,
is often imperfect starting materials – chemicals, for example.
They are the foundation.

Let something go wrong at the beginning and there is often no cure,
no way to avoid trouble, expense and rejections. That's why so many concerns
start with Mallinckrodt chemicals. They're exactly right, always dependable,
and most chemicals you might need are immediately available.

In case they are not now in stock, in case you need special chemicals
to meet specific problems – Mallinckrodt will help you in a hurry
with the right chemical in the right physical form.

An important advantage of a chemical plant like Mallinckrodt's is flexibility
of research and production facilities.

Mallinckrodt®

SERVING THE PROCESS INDUSTRIES **SINCE 1867**

Mallinckrodt Chemical Works

Manufacturers of chemicals for industrial, medicinal, photographic and analytical uses

MALLINCKRODT STREET, ST. LOUIS 7, MO. 72 GOLD STREET, NEW YORK 8, N. Y.

CHICAGO • CINCINNATI • CLEVELAND • LOS ANGELES • PHILADELPHIA • SAN FRANCISCO • MONTREAL • TORONTO

FINE HEYDEN CHEMICALS

Industry counts on Heyden ...as a dependable source of organic chemicals

For more than 50 years Heyden has been supplying organic chemicals to almost every process industry you can mention. These products have grown steadily in number, volume and applications, and are known for their high standards of quality and dependability. We believe this is a direct result of our continuing research, exacting technical control, and advanced manufacturing methods.

Heyden organic chemicals comprise both aliphatics and aromatics, which include large volume basic raw materials for many important fields:

- **Formaldehyde** (Hexamethylenetetramine, Paraformaldehyde) for plastics, textiles, leather and chemicals
- **Pentaerythritols** (Pentek®, Mono-, Di-, Tripentek®) for paints and varnishes
- **Salicylic Acid and Salicylates** for drugs, odorants, dyes, resins
- **Chlorination and Oxidation Derivatives of Toluene** (Benzyl Chloride, Benzaldehyde, Benzoic Acid) for dyes, sanitizers, drugs and cosmetics
- **Other Organic Intermediates** for a wide variety of products

Write to us now for further information on Heyden chemicals. We shall welcome the opportunity to work with you.

HEYDEN CHEMICAL CORPORATION

342 Madison Avenue, New York 17, N.Y.

CHICAGO • CINCINNATI • DETROIT • PHILADELPHIA
PROVIDENCE • SAN FRANCISCO